THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

JULY, 1894.

CHLOROFORM IN VETERINARY PRACTICE.

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IN continuation of the article by Mr. Wallis Hoare, F.R.C.V.S., of Cork, on the administration of chloroform to horses and dogs, which appeared in the May issue of the VETERINARY JOURNAL, the following notes may perhaps be of interest.

During the past three years, chloroform has been administered in the ordinary course of the college practice, to 764 patients without a single fatal or even bad result. Carlisle's chloroform muzzle is employed, as well as what is evidently much the same kind of apparatus as that described by Mr. Hoare, and which was made after the pattern of Junker's inhaler by Veterinary-Captain Blenkinsop, A.V.D., when he was Professor at the Lahore Veterinary College two years ago. This rough apparatus was made with a graduated bottle, some glass and india-rubber tubing, and an ordinary Richardson's hand bellows; this, although small, answered its purpose. The apparatus described by Mr. Wallis Hoare, is evidently much more powerful and perfect in its action.

I have never seen any difficulty or danger in administering chloroform to the horse, and in the Lahore College it is the rule that in any operation in which it is necessary to throw down the animal, chloroform is to be administered. With Carlisle's muzzle the usual quantity required is 2½ to 3 ozs.; but with the crude apparatus made by Blenkinsop, the amount was about 1 to 1½ ozs.

In one particularly long and severe operation, in which the

horse was down for longer than an hour, I gave nearly 12 without any ill result.

The climate appears to make but little difference to the action of chloroform, which is employed here all the year round, and in the Punjab the thermometer ranges from a freezing temperature in the winter to over 100° Fahr. in the shade in June and July. I may also state that I have never noticed that chloroform has any evil influence in the healing of wounds or in causing secondary hæmorrhage—such as after the operation of castration—which it is said to do.

NOTES ON MALLEIN.

BY PROFESSOR M. E. LECLAINCHE, TOULOUSE VETERINARY SCHOOL.

IT is everywhere repeated that Mallein was prepared for the first time by Kalning in 1891, and that he merely applied to the cultures of the glanders bacillus the method adopted by Koch in the preparation of tuberculin. But it results from the documents recently published*, that the history of the early days of Mallein should be rectified and completed.

In reality, Mallein was discovered by the Russian Military Veterinary Surgeon Helman, towards the end of 1888, and the first experimental results obtained were published in 1889. In a communication made on April 27th, 1890, to the Veterinary Society of St. Petersburg, Helman announced that he had sought to obtain an extract from glanderous cultures, with the view of immunising animals; but that, with those which were glandered, the local reaction and elevation of temperature prohibited the employment of large doses, and rendered experiments difficult. The author added that his investigations were inspired by the excellent work of Roux and Chamberland, in 1887, on the immunisation conferred against septicæmia by soluble substances, and that he had applied the same method to *glanders* and *tuberculosis*. During the following year, Helman made a second communication to the same society, in which he insisted on the diagnostic importance of the "extract from glanders cultures." When inoculated into fifteen glandered horses in doses of one cubic centimetre, in from the eighth to the sixteenth hour, the Mallein produced a considerable elevation of temperature (from 2° to 3°), and a characteristic tumour at the seat of

*Kostoff, "Sulla Diagnosi della Morva Equina," Giorn di Veter. Militare, 1893, p. 521.

inoculation. Five healthy horses inoculated at the same time did not exhibit any reaction.*

Some months later, the results obtained by Kalning, of Dorpat, were published in the *Archives des Sciences Vétérinaire*, and were soon made known and controlled in other countries.

From these facts it is evident that Mallein should not be considered as the result of the mere adaptation of Koch's technique to the cultures of the glanders bacillus, but that it proceeded directly—as did the tuberculin elsewhere—from the French methods of immunisation by soluble products.

The diagnostic importance of Mallein has never been seriously contested, and at the present time test inoculations are practised throughout Europe by hundreds of practitioners. The very numerous writings published in quite recent days testify to the considerable extension which has taken place in this method, and its capital importance in regard to the sanitary police of glanders.

But however this may be, the collective observations show that if, in the immense majority of cases, the indications furnished by Mallein are of marked and absolute precision, they are insufficient in others, and also that in some circumstances they appear to be erroneous. It is needful, therefore, to determine systematically the frequency of, and the conditions attending, these failures, and it is with this object that Professor Schindelka has taken up the question, and has recently published the results in a professional periodical.†

The observations of the Vienna Professor extended to 503 horses, of which 148 were killed and autopsies made on them The greater number of inoculations, 453, were made with Foth's dry Mallein,‡ which the author considers is preferable to any of the others, because of its being easily preserved and conveyed. The conclusions arrived at need not be referred to otherwise than with reserve, so far as the Mallein of other manufacture is concerned, for the advantages of Foth's Mallein appear to us to be very relative.

With regard to the effects of Mallein, according to Schin-

*Journal of the Veterinary Society, No. 4, St. Petersburg, 1891. (In the somewhat detailed obituary notice we gave of Helman in this Journal for November, 1892, p. 388, it will be observed that we gave him full credit for the discovery of Mallein.—Ed. V.J.)

† Schindelka. "Einige Erfahrungen über die Anwendung des Malleins als Diagnostiches Mittel." Œsterr. Zeits. für Wissenschaft. Veterinärkunde. Band V., 1894, pp. 97—192.

‡ The dry Mallein, prepared by the German Military Veterinary Surgeon Koth, is obtained by precipitation in an excess of absolute alcohol, and afterwards dried by evaporation in a desiccator. The Mallein then appears as a white powder, and it is employed, after being diluted with boiling water, in an average dose of five centigrammes.

delka we ought to distinguish two kinds of reaction. In the *typical reaction* the temperature rises suddenly or progressively to its highest point and remains for a long time stationary; the line of temperature is represented by a very elongated curve, which otherwise shows certain slight variations in some instances. The descending portion of this line is usually of the same form as the ascending one, and the variations in the upper part or plateau are scarcely more than some tenths of a degree. In the *atypical reactions*, the thermometric curve is altogether different; the temperature is seen to ascend suddenly to a very high degree, remain there for a few seconds only, and then rapidly fall to the vicinity of the initial temperature. In some rare cases a second crisis of hyperthermia occurs after a variable time, the temperature mounting brusquely again, only to fall immediately afterwards.

But if the typical reaction almost certainly indicates that the animal is glandered, the atypical reaction does not do so, and is frequently enough noticed in healthy animals. A very grave indication is furnished by the researches of Schindelka, for it appears that horses affected with pulmonary emphysema may react to Mallein, and give as typical a reaction as if glandered. This cause of error occurred three times in the course of the experiments, one animal giving the typical reaction of 2·1°, though the other two only gave 1·7°. A typical reaction has also been obtained in an emphysematous horse with the Mallein of Preisz (Observation of Th. Schmidt).*

The conclusions of the author are all the more interesting because he is very severe towards the Mallein; they are formulated as follows:—

"All the horses inoculated with Mallein, and which have shown a typical reaction of two or more degrees, have been found to be glandered with the exception of one, which at the autopsy exhibited the lesions of chronic emphysema. In cases of atypical reaction, even reaching as high as two degrees, the horses were ascertained to be healthy. In a total of sixty-seven cases there were sixty-three which showed the typical reaction and were glandered, four which gave the atypical reaction and were healthy, and one which was emphysematous.

"A thermic elevation of between 1·9° and 1·3° does not

* This was also the case in another observation published recently, in which there was reaction from 37·6° to 39·3° Cent., the local reaction being entirely absent. Schindelka. "Zur Casuistik der Malleinimpfungen." Thierärzt Centralblatt, Band 17, p. 152.

offer a sure diagnosis. Such a reaction is given by glandered and non-glandered animals, and this diversity in the action of Mallein should be ascribed to the variations in susceptibility of the inoculated, and not to diverse degrees in the toxicity of the products." In a total of sixty-three animals belonging to this category, thirty-six were glandered and twenty-seven were healthy.

"Finally, a reaction of 1·2° and less, so far as the control was possible, was only observed in non-glandered animals."

The inoculation of Mallein into animals affected with strangles, or which had a collection of pus in the frontal sinuses, did not produce a typical reaction.

The author is of opinion that the Mallein should not be relied on, though it has been hoped that it might, to discover with certainty all the glandered subjects in an agglomeration of horses, because of the great number which ought to be classed as simply doubtful; and what is more, it would be dangerous to systematise the employment of it under such conditions.

The work of Professor Schindelka appeared to me to be interesting, for the reason that he so well renders the sense of the only reasonable criticisms that might be advanced on the use of Mallein. If very distinct indications are furnished in the majority of cases, in others the inoculations only give a doubtful response. Already the most elementary good sense directs that recourse should be had to the Mallein test, although the result should be uncertainty because an insufficient reaction might be obtained; for it is always possible in such a case to have recourse to another inoculation, or to the other methods of experimental diagnosis. And is it not a considerable advantage to know that an animal ought to be considered as suspected?

If the question be looked at from a sanitary point of view, the solution is still more simple. It is not only the glandered animals that ought to be killed, but also all the suspected ones; for it is certainly more important that twenty-seven innocent ones should be sacrificed than one hundred should be infected. The German law which orders the slaughter of the suspected is a sound one, and it would be well to resolve to follow this example when it shall be deemed necessary to seriously enforce sanitary police regulations in France.

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It the utilisation of the revelatory properties of Mallein has had the effect of completely amending the sanitary police

of glanders, it has also permitted observations to be made that at the same time are of interest from an etiological and general therapeutical point of view.

On the strength of the observations which had been accumulated for more than a century, it has been universally admitted that in agglomerations of horses, glanders was only slowly transmitted, and that even with prolonged cohabitation a very large majority of the animals escaped infection. In regiments and in the stables of large transport companies there was always found a number of horses which remained free from the disease, or were only contaminated after a long time. These observations were made at all periods, even when the contagiousness of glanders was denied, and no sanitary measures were applied to it.

But in 1892 Mallein was utilised in France among the horses of several remount annexes invaded by glanders, and it was then learned with a kind of stupefaction, that the inoculations denounced as glandered more than one half the number of the effective horses. At Montoire, in a total of 228 horses, 58 were discovered to be glandered (more than 2° reaction), 73 suspected (reaction 1° to 2°), and 97 healthy. In Russia, Mallein was employed among the horses of a brigade of reserve cavalry in the Government of Charkov, and of 658 animals tested, 230 were found to be glandered, 138 suspected, and 290 healthy.

The control, assured by the slaughter and the autopsy of a certain number of condemned animals, gives also unexpected but nevertheless conclusive results. In a few subjects only are old and characteristic lesions of glanders discovered; the majority merely show quite recent and very limited alterations exclusively localised in the lungs. They consist in the presence of "grey homogeneous tubercles without a central caseous point" and identical, so far as their aspect is concerned, with the semi-transparent grey nodule of tuberculosis. Often only two or three of these neoformations are met with, in the absence of all other specific alterations.

The signification of these lesions appears evident, and only the grossest ignorance of the most elementary knowledge of the pathological anatomy of glanders would render a mistake possible in deciding what they are due to. The grey tubercles have been described by all those who have taken the trouble to carefully examine glandered lungs. Nocard has cited the names of foreign pathologists who have mentioned them, and to his list he ought to add the names of Rawitsch, Leisering, Czokor, and more especially that of

Rabe, in whose works Leblanc found a number of facts which he had not suspected. It is needless, otherwise, to go to Germany for a description of such common lesions, for if Bouley had carefully abstained from giving an account of the glanders tubercle, we find it exactly described in Reynal's "Police Sanitaire :—"

"At the first period the glanders tubercles are represented by small hyperæmic and regularly spherical islet. . . . If we examine these small centres, we notice that they are the seat of an abundant serous infiltration, and yet the tissue within them is yet supple enough, elastic and depressible, and almost as tenacious as that around their margin. . . . At a more advanced period there is perceived in the centre of each of them a whitish-grey point, at first scarcely visible, but which very rapidly acquires the volume of a millet seed or larger sometimes. It maintains around it an areola of hyperæmia, and is not isolated from the tissue surrounding it. If it is extracted from the place it occupies, it appears as a small filamentous, rounded globe, slightly elastic on the surface, crushing with difficulty, of a whitish-grey colour, and slightly transparent." *

This is exactly the grey tubercle which, according to the official report of Montoire, has given rise to disputes or inspired doubts in several members of the commission who had never seen such lesions before.

These are the commencing lesions that the use of Mallein has revealed, and it is to be remarked that the reaction produced is independent of the form and the extent of the specific lesions. The following experiment performed by Semmer † furnishes a new demonstration of this fact.

Helman had obtained, at the Institute of Experimental Medicine of St. Petersburg, the cure of a glandered horse and its complete immunisation. When inoculated at different times beneath the skin with a great quantity of virulent bacilli, the animal on each occasion had an abscess at the point of inoculation, but the infection always remained local. In these conditions the injections of Mallein always produced a reaction almost immediately after the virulent inoculation and during the whole time of the evolution of the abscess, but they did not have any effect as soon as this was opened.

* Reynal. "Traite de Police Sanitaire," 1873, p. 783. An analogous description is also given in the course of lectures by Nocard, from the first year of his teaching on the contagious maladies.

† Semmer. "Ueber Gutartige Heilbare Formen des Rotzes. Deutsche Zeitschrift für Thiermedicin," 1893.

The reaction is therefore related solely to the presence of of the bacilli in the organism, and the reagent possesses an exquisite sensibility.

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It would be interesting to know what becomes of the slightly infected horses. The experiments at Montoire furnish precise indications in regard to this. Of the animals which had given a reaction of more than 2° after the first inoculation, none showed anything more than slight hyperthermia when tried again a month subsequently; others which were considered suspected after this first test did not exhibit any reaction. Seventy-seven horses belonging to the different categories that had furnished the horses which had the grey tubercles, were kept for about a year without betraying any suspicious symptom, and were therefore sent to the different regiments.

In Russia, 230 horses which had shown a rise in temperature of more than 2° were also kept alive. One of them which had reacted strongly, became clinically glandered and was destroyed; all the others remained apparently healthy and were considered as cured.

"The value of Mallein as a means of diagnosis is in no way diminished by these results," says Semmer,* "on the contrary, the Mallein betrayed the existence of the slightest traces of infection, and when at the autopsy of a horse which had given a strong reaction to Mallein, no lesion of glanders is found, it ought not to be concluded that the animal is free from the disease, but rather it should be accepted that the infection has not yet got beyond the presence of the bacilli in the tissues, the lesions not being sufficiently developed to be recognised."

And further: "An artificial or spontaneous cure of benign glanders is possible, and when the reaction of Mallein disappears in a horse after a certain time, the animal ought to be considered cured."

From this it appears that the much discussed question as to the curability of glanders is now again revived; there is nothing fatal in glander infection, on the contrary, a large number of animals resist it, and the the lesions already developed cicatrise.

It is established that glanders may disappear in the absence of all treatment. We only refer to the most recent instances. Semmer and Itzkovitch have reported the

Loc. cit., p. 65.

recovery of a foal affected with glanders and farcy through inoculation. Semmer says he has met with twelve horses which remained insensible to the action of Mallein, and in which the glander lesions on the skin and mucous membranes were completely cicatrised. A cure has been several times obtained by the use of various medicaments. Levi, of Pisa, has frequently achieved this result by the intra-tracheal injection of Lugol's solution of iodurated-iodine. Ivan Neiman has cured sixteen horses affected with glanders in different degrees; and in all the cases he has assured himself, by a bacteriological examination and by inoculations, of the disappearance of the bacilli from the discharges of the diseased animals.

If the cure of glanders is possible, it is none the less exceptional; for in the great majority of infected animals which receive no treatment glanders follows its ordinary evolution. In the Montoire experiments, it is to be observed that among the 77 horses certainly attacked none became clinically glandered; and in the Russian experiments, 230 horses denounced the first time appeared to be healthy afterwards.

The only interpretation we can put upon these results is to admit a *curative action for Mallein* in recent glanders, and this action is otherwise demonstrated by direct experiments. We have seen that Helman obtained the complete cure and immunisation of an affected horse. Babes cites the cure of a horse and a guinea-pig.

Pilavios,* Principal Veterinary Surgeon of the Greek Army, has reported eight cases of complete cure obtained in horses recently attacked, by repeated injections of Mallein. The animals gave a reaction of 2° to 3·5° after the first inoculations, but nothing more in thirty-five days, when they received a third inoculation, than a hyperthermia of 0·3° to 0·5°. They were all sent to duty subsequently.

Bonome and Vivaldi† have obtained the complete cure of a glandered horse by repeated inoculations of Mallein. In man, Mallein has given very good results as an adjunct in the treatment of the disease.

Johne and Schindelka‡ have observed cicatrisation of the ulcers of the trachea under the influence of Mallein, and both believe in the possibility of cure in certain cases of glanders, by methodic and repeated inoculations.

* Pilavios. "Das Mallein als Heilmittel gegen Rotz." Berliner Thierärzt. Wochenschrift, 1893, No. 20.

† Revue Vétérinaire, 1894, p. 268.

‡ Loc. Cit., p. 186.

The curability of glanders at the commencement of infection, which Nocard strongly affirmed during the course of the experiments at Montoire, is to-day fully confirmed and admitted by all experimentalists.

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The deductions which arise from this summary study will appear still more suggestive, if there are remembered the analogies of every kind that exist between glanders and Mallein on the one part, and tuberculosis and tuberculin on the other.

It results from the knowledge already acquired, that in an infected place contamination occurs with extreme facility, and that the virus enters most, if not the whole, of the animals exposed. If some of them offer sufficient resistance, the infection remains very limited, and no sign of the disease is noticeable; but if, on the contrary, the defence is impotent, the lesions extend more or less rapidly, and the clinical symptoms may be perceived.

In this way can be explained a number of observed facts, the real signification of which would otherwise remain unknown. Few exposed animals escape the glanders bacillus, but they offer a resistance to it which is often victorious. All the causes capable of increasing the resistance of the organism, possess a true influence, and the old etiology of glanders, which the contagionist reaction has so ruthlessly demolished, assumes the relative importance that really belongs to it. We now discern the exact signification of numerous observed facts on which were based the "theory of exhaustion," so brilliantly defended by Bouley. Here also it would be easy to show that the new doctrines are not exclusive, and that it is scarcely possible to account for the opposition that they receive from the later contemners of "pure observation."

The therapeutics of glanders receives at the same time a sure basis. We now know that "there are forms of glanders which are curable, and which recover by the help of nature only" (Nocard); we know also what is the happy influence of certain hygienic prescriptions, and notably *æration* realised by permanently keeping animals in pure air. Revealed at its commencement by the employment of Mallein, glanders might be frequently cured, the Mallein aiding in this; in this agent also we have an assured criterion of the complete disappearance of the infection.

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All the newly acquired facts confirm and render precise the high *practical* value of Mallein as a diagnostic agent for glanders. They demonstrate that the existence of the malady may not be suspected clinically, or proved to be present by the other methods of experimental diagnosis, until an advanced period of its evolution. Every practitioner knows, in fact, that it is necessary to have *clinical tact* in dealing with glanders—there is not a clinician, no matter what his reputation or his real value may be, who has not been the victim of some one of those monumental errors, the remembrance of which is often preserved in the traditions of the schools. I have, for my part, some mistakes of this kind on my conscience, and I would willingly make the confession if my claim to the title of clinician were not as easily contested.

If the diagnosis by Mallein is not reduced, as was for a time hoped, to simple thermometric observations, and if the observations made require to be grouped and interpreted, it may at least be affirmed that the new method remains incomparably more potent and more exact than all those we had previously possessed.

In certain cases Mallein will only give presumptions, but it is already a considerable result to obtain the confirmation of an anterior suspicion or the revelation of possible infection.

In other cases, and nearly always in the ordinary conditions of practice, the Mallein responds with a distinctness which leaves no doubt behind.

"When the reaction produced by the Mallein is complete," justly remarks Nocard, "the indications it yields have an absolute value; and by complete reaction I mean that which includes, along with the hyperthermia, the large œdema at the seat of injection, the prostration, the tremblings, the horripilation, the loss of appetite, etc. . . . The hyperthermia by itself may suffice to decide on slaughter, when it is *considerable* and *durable*, and all chances of error have been eliminated, notably those which result from atmospheric variations.

"If the organic reaction is entirely absent, it may be prudent not to place too much reliance on the hyperthermia until two succeeding trials have been made at an interval of ten or fifteen days, and it shall have exceeded two degrees."

With these reservations, due to excessive prudence, perhaps, Mallein offers diagnostic certainties, and the services

that it has already rendered are a sure pledge for the future.* —*Revue Vétérinaire.*

TUBERCULOSIS IN RELATION TO ANIMAL INDUSTRY AND PUBLIC HEALTH.

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(*Continued from page* 423, *Vol. XXXVIII.*)

Experimental Tuberculosis by Feeding.

THE experimental transmission of tuberculosis by feeding tuberculous products, was demonstrated by Villemin, Günther and Harms, Zurn, Gerlach, Johne, Kolb, Toussaint, Chauveau, Peuch, Leisering, Bollinger and a host of others, the animals infected in this way including guinea-pigs, rabbits, fowls, swine, sheep, goats, dogs, cats and birds. Infection was by no means so constant as when inoculation was performed, yet in 322 experiments recorded by Johne, 13 per cent. became tuberculous. The varying results depend on a variety of causes, among which may be named :—

1st. The relative susceptibility of the various animals experimented upon. As we know, this varies greatly with the genus, species, family, and even the individual.

2nd. The condition of the digestive organs at the time of feeding. The bacillus tuberculosis lives in an alkaline or neutral medium, and suffers weakening, or even death, in an acid liquid like the contents of the stomach during active digestion. If, therefore, the subject of experiment has a strong digestion, and if infecting matter is taken only during active digestion, infection is usually promoted. If, on the other hand, the infecting material passes through the stomach in water or otherwise, in the intervals between digestion, when

* We owe to Principal Veterinary-Surgeon Neiman, of the Russian Army, the communication of the following documents :—

By a circular, dated March 20th, 1894, the Russian Staff has published the annexed instructions, drawn up by the Direction of Military Health, for the employment of Mallein :

1. Every army horse which shows any doubtful sign of glanders shall be immediately submitted to Mallein. If there is an elevation in temperature of more than 2 degs., and if there exists at the same time a local reaction and general symptoms, and if the hyperthermia persists for thirty-six hours, the horse shall be killed after confirmation by inoculations and a bacteriological examination.

2. In cases in which, after a reaction of more than 2 degs., the inoculations and bacteriological examination do not conform to the diagnosis, the horse shall be submitted a second time to the Mallein. If the reaction is again obtained the animal may be killed on the decision of the medical inspector of the military district.

3. The Mallein prepared at the Imperial Institute of Experimental Medicine of St. Petersburg is only to be employed.

4. All the investigations into the condition of the suspected horse should be terminated in two months at the most.

The other paragraphs concerning the technic of the inoculations are identical with those of the French regulations of January 29th, 1893.

the stomach is neutral; if there is indigestion, so that the contents are only mildly acid, and infecting morsels pass into the bowel without having been digested or thoroughly impregnated with acid; or if the stomach is overloaded, so that part of its food passes on undigested; then, manifestly, infection is possible or probable. Again, if there are raw sores on the mouth, throat, or gullet, or if the germ happens to lodge in the recesses of the bowels or pass down into the lungs, infection may start from any such point as a centre.

3rd. The germ is more or less virulent according to the animal from which it is derived. Thus the virus from the ox which proves certainly fatal to the guinea-pig on inoculation, cannot be successfully inoculated under the skin of the guinea-pig after it has passed through several generations in as many birds; but if inoculated from the bird in the abdomen of the guinea-pig, and continued for several generations in this rodent, it reacquires all its former potency (Nocard, etc.). So to a less extent with cattle; from one cow the inoculation invariably produces the disease; from another only occasionally. The same must hold in feeding.

4th. The degree of infection of the material fed with has much influence. Tuberculous glands, and tubercles, whether recent or caseated, are, of course, the most certainly infecting. The blood and red flesh (in the ox) may be said to be the least frequently infecting, while the infecting power of milk will vary according as the udder is or is not the seat of tubercle. Toussaint, who seems to have met with especially virulent cases, inoculated successfully with the blood, nasal discharge, bile, urine, tears, flesh juice, dung, etc., of a tuberculous cow. Others, like Nocard and McFadyean, have failed with blood and flesh juice. The danger may be estimated by taking a middle position. It may be well to consider the blood, flesh and milk separately.

Dangers from Blood.

It cannot be denied that blood is inimical to this bacillus, as it is to most other microbes. Even if the virus is injected into the veins in such quantity as to produce general tuberculosis, the germs become largely arrested in different organs, or robbed of their virulence; so that in a few days the blood is comparatively little infecting. This does not, however, do away with the fact that the injected bacilli live long enough in the blood to produce tubercles in many different organs, and the same is true when the disease

extends from single primary tubercles, to a general tuberculosis; in most cases the bacilli can only have travelled through the blood. Bang found that of 20 cows in advanced tuberculosis, the blood of only two (or 10 per cent.) proved infecting when inoculated. Nocard has never succeeded in producing the disease by injecting the blood of a tuberculous ox into the abdominal cavity, yet he recognizes that, as the disease extends by means of bacilli conveyed by the blood, this liquid must be infecting wherever these bacilli are contained in it. As the migrating bacilli must be present in the blood before these secondary tubercles can be formed by them in organs distant from the tubercles that gave them birth, it follows that this infecting condition of the blood must precede the formation of the secondary tubercle, or general tuberculosis. While, therefore, it is quite true that the probabilities of infecting blood are greatly increased when the tubercles are numerous and generally diffused, it is an error to assume that the restriction of the tubercles to one organ is a guarantee that the blood is non-infecting. And when we cannot give a guarantee for the blood, we can give none for any part or organ in which blood circulates.

Danger from Flesh.

It would seem as if the muscle or red flesh in cattle were antagonistic to the bacillus tuberculosis. Certain it is that tubercles are rare in the substance of the muscle. They are, however, very common in the lymphatic glands lying between the muscles, and in swine they are common in the substance even of the red flesh. The flesh of tuberculous pigs is therefore far more dangerous than is that of consumptive cattle. Even in tuberculous cattle, however, the beef is not always free from bacilli, as shown especially by the crucial test of inoculating its juice. Arloing tested 10 tuberculous cattle in this way, by inoculating guinea-pigs, and found that the muscle from two of the cows only (20 per cent.) proved infecting, and that only 3 of the 10 guinea-pigs inoculated by the muscle juice of these two cows became tuberculous. Galtier fed two calves and two young pigs with the raw flesh of a tuberculous cow, but failed to infect them. This failure was, however, not necessarily due to the absence of bacilli, since two rabbits inoculated with juice from the same flesh contracted tuberculosis. Nocard fed several litters of young kittens on the flesh of cattle condemned as tuberculous, at the abattoirs of La Vilette and Grenelle, but none of them con-

tracted tuberculosis.* Perroncito fed 18 young pigs from three to five months old on the flesh of cattle condemned as tuberculous in the Naples abattoirs, yet none became tuberculous.

Two things are shown by the above: (a) that the red muscle is less frequently infecting than other parts, yet unquestionably so in some cases; and (b) that the acid stomach juices during vigorous digestion are in some measure protective. It is equally plain that no sufficient guarantee can be given as to the safety of the raw flesh in any particular case. Then, again, the intermuscular lymphatic glands, which are favourite seats of infection, were carefully avoided in the above experiments with flesh juice, yet they always go with the dressed carcase, and are eaten with its steaks and roasts. In pigs, as already noted, the muscle itself is often tuberculous.

Danger from Milk.

Milk is more to be dreaded than meat, because the udder is often the seat of tuberculosis, and the milk is usually taken uncooked. The danger is enhanced by the fact that this is often the necessary and only food of the infant and invalid, in which the germ is especially liable, through weak and imperfect digestion, to escape into the susceptible bowel.

In milk, as in the case of meat, a strong, vigorous digestion does, in some measure, protect the consumer. Peuch fed a two months' pig in five days with 4½ quarts of milk drawn from a tuberculous udder, and when killed in 56 days, it proved quite sound. He inoculated four rabbits with the milk, and all four became tuberculous. Again, in the absence of tuberculosis in the udder, the milk may be little, if at all, infecting. Gerlach, who produced tuberculosis in calves, pigs and rabbits by feeding with the milk, found no result from certain tuberculous cows, while others infected a large proportion. Nocard and McFadyean have been unable to infect rabbits, etc., with milk from the apparently sound udder of a tuberculous cow. The same has been my experience with milk from one cow in the last stages of chronic tuberculosis, and another having acute tuberculosis. Bollinger, Nocard and McFadyean claim that, in the absence of tubercle in the udder, the milk is not infecting. Whether true or not as an ultimate fact, this cannot be made a rule of action, as the following will show:

Hirschberger inoculated rabbits in the abdominal cavity,

* By inoculation with the muscle juice of tuberculous cattle, Nocard infected 5 per cent. of the subjects of experiment.

with the milk of 29 tuberculous cows, of which the udders were or appeared sound, and produced tuberculosis 14 times.

Bang inoculated from 63 tuberculous cows selected for their sound udders, and found the milk of nine of them infecting. A careful microscopic examination revealed tuberculosis in the udders of three of the cows, leaving six giving infecting milk in which, even after death, and with all scientific appliances, no tubercle could be found in the udder. This is 9·5 per cent. as tested by the microscope after death; it was 14·28 per cent. as tested by the able veterinary professor during the life of the cows.

Ernst found 10 cows in 35 with infecting milk, though the udders were sound. In 103 animals inoculated, 17 contracted tuberculosis, and of 12 calves sucking the cows, five became tuberculous.

Drs. Smith and Kilborne (Bureau of Animal Industry, Bulletin No. 3), found the milk infecting in three cows out of six with apparently sound udders. One infecting cow, and one non-infecting one had each tubercle in the lymphatic gland behind the udder. Forty-four per cent. of the inoculated guinea-pigs contracted tuberculosis; one in five from one cow, eight in ten from another, and six in six from the third.

In my own experience, three calves, from healthy parents, sucking the apparently sound udders of three cows with general tuberculosis, all contracted the disease.

It must be allowed that calves sucking the cows run extra risk of infection through their nurses licking them, and through feeding from a common trough; but there is the same danger for the ordinary milk consumer, since the cow in licking her udder is liable to leave bacilli to fall into the pail at the next milking.

Again, the concentration of the bacillus in the indiluted milk of an infecting cow renders this much more dangerous than the milk of the same cow diluted with that of 20, 50, or 100 others. Bollinger and Gebhardt found that milk which infected all animals that took it pure, was apparently harmless when diluted with 50 or 100 times its volume of the milk of sound cows. As the bacillus can live in milk, this apparent loss of virulence must be largely due to the reduction of the number of bacilli in a given measure of milk, and to their tendency to removal by adhering to the sides of the vessel during the mixing.

Tuberculous expectoration, which is incomparably richer in bacilli, may be diluted in 100,000 times its volume of

water, and yet remain infecting. But again the glutinous saliva forms a protecting coating which strongly resists dilution.

Infection of Man through the Milk.—Instances of accidental tuberculosis of the human being through drinking the unsterilized milk are no longer wanting.

In the practice of Dr. Stang of Amorback, a well-developed five-year-old boy, from sound parents, whose ancestors on both male and female sides were free from hereditary taint, succumbed, after a few weeks' illness, with acute miliary tuberculosis of the lungs and enormously enlarged mesenteric glands. A short time before, the parents had their family cow killed and found her the victim of advanced pulmonary tuberculosis. (Lydtin.)

Dr. Demme records the cases of four infants in the Child's Hospital at Berne, the issue of sound parents, without any tuberculosis ancestry, that died of intestinal and mesenteric tuberculosis, as the result of feeding on the unsterilized milk of tuberculous cows. These were the only cases in which he was able to exclude the possibility of other causes for the disease, but in these he was satisfied that the milk was alone to blame.

After a lecture of the author's at Providence, R.I., a gentleman of North Hadley, Mass., a graduate of the Massachusetts Agricultural College, publicly stated that his only child, a strong, vigorous boy of one and a-half years, went to an uncle's for one week and drank the milk of a cow which was shortly after condemned and killed in a state of generalized tuberculosis. In six weeks the child was noticeably falling off, and in three months he died, a mere skeleton, with tuberculosis of the abdomen. The father could trace no tuberculosis among his near ancestors, but the mother's father and uncle had both died of it. The mother remains in excellent health.

Dr. E. O. Shakespeare (*Medical News*, March 26th, 1892) attributes one-fifth of all deaths in infants and young children feeding on milk, to tuberculosis usually commencing in some part of the digestive organs.

Identity of Tuberculosis in Cattle and Man.—This is abundantly proved in the above instances of the infection of man through the milk, and in the hundreds of cases in which the tubercle of man has been successfully inoculated on the lower animals. As evidence of direct transference of the disease from cattle to man by inoculation, the following two cases are quoted :

Tscherming, of Copenhagen, attended a veterinarian who had cut his finger in making a *post-mortem* examination of a tuberculous cow; the wound healed, but there remained a swelling which soon ulcerated and refused to heal, so that the whole tumefied mass had to be cut out. The microscope revealed the distinct tubercular process, and the presence of the characteristically staining bacilli.

Pfeiffer attended a Weimar veterinarian of the name of Moses, 34 years old, of good constitution, and without hereditary predisposition, who, in 1885, cut his right thumb deeply in making a *post-mortem* examination of a tuberculous cow. The wound healed only six months later, the cicatrix still remained swollen, and in the autumn of 1886 the man had pulmonary tuberculosis with bacilli in his sputa, and death occurred in two-and-a-half years after the wound. *Post-mortem* examination revealed tuberculosis of the joint of the wounded thumb, and in the lungs extensive tubercles and vomicæ.

To Tscherming's may be added the case of a young veterinary friend of the writer, who was inoculated in the hand in opening a tuberculous cow, and suffered from a tumefaction of the resulting cicatrix, with distinct tubercle bacilli. The surgical removal of the tumefaction manifestly saved the subject from a generalized tuberculosis.

II. Poisoning by Ptomaines and Toxins, in Meat and Milk of Tuberculous Animals.

By an unaccountable oversight, medical and veterinary Sanitarians alike have never, up to the present hour, looked beyond infection by the tubercle bacillus in estimating the dangers to man of tuberculosis in our flocks and herds. We find, accordingly, that the question kept continually before the public is that of the presence or absence of the tubercle bacillus in any food product—meat, milk, butter or cheese—furnished by the diseased or suspected animal. The question of the presence or absence of ptomaines or other toxic elements which are calculated to prove hurtful, or even fatal, to certain members of the human race is not for a moment considered.

Hence we are met by the most elaborate arguments that tubercle is rare in the muscular system of cattle, and that muscle juice is inimical to the bacillus, and that, therefore, the muscular tissue which forms the great mass of the dressed carcase may, as a rule, be safely eaten, even though the

internal organs may have been affected by tubercle. In Germany and other European countries, the flesh of animals in which the tubercles are found in only one organ or in two related ones, is passed as wholesome. It is only when the tubercles are found in the bones or muscles, or in the lymphatic glands among these, or, finally, when the tubercles are so generally distributed in different parts of the body that it is evident that the bacilli must have been carried by the blood, that the meat is rejected as unfit for human food. So with milk and other dairy products; many claim, with Nocard and McFadyean, that the milk is harmless so long as the udder is quite free from tubercle, and that it is only when tubercle is unmistakably present in that gland that this secretion is to be feared. Apart altogether from these discussions as to the wholesomeness of uncooked flesh and milk, it is safe to say that up to the present every writer on the subject holds that even the infecting tuberculous meat and milk is rendered absolutely harmless by cooking. The consensus of professional opinion on this subject is tersely given by Salmon and Smith in their article on tuberculosis in the work on the "Diseases of Cattle," published by the Bureau of Animal Industry—"Fortunately, tubercle bacilli are readily destroyed by the temperature of boiling water, and hence both meat and milk are made entirely safe, the former by the various processes of cooking, the latter by boiling for a few minutes."

But this is altogether too narrow a view to take of the subject, and it is liable to lead to most serious and fatal results if put into every-day practice. The professional mind, in concentrating its attention on *tubercular infection*, has practically entirely overlooked the no less real and, in many cases, no less dangerous fact of *tubercular poisoning*. To elucidate this point, let us consider that much of the poisonous matter produced by the growth of the tubercle bacillus is retained in Koch's "tuberculin," which has been absolutely sterilized. What, then, is the action of "tuberculin" on the animal system? It produces a constitutional disorder with elevation of the body temperature, commonly known as fever, and an impairment of most of the bodily functions, notably those of assimilation and secretion. This is abundantly manifest in the wasting and fever of the victim of acute tuberculosis, in which these poisonous principles are being constantly produced in large quantities. As the dose is reduced, a point is finally reached at which no fever or appreciable systematic derangement is produced, and thus in many slight and indolent cases of tuberculosis the animal appears well, and thus,

also, the usual test dose of tuberculin has no recognizable disturbing effect on the healthy animal system. With a dose less than this, it may even be questioned whether it may not be actually beneficial in conferring on the healthy system a small measure of tolerance and power of resistance to the bacillus and its poisons. This, however, is of little account, seeing that no real immunity from tuberculosis is ever acquired. In many systems, both human and brute, the disease continues its slow progress for many years, and the slight tolerance that results, while it may suppress the disease so that it assumes an indolent and chronic form, does not fully arrest it.

Very different is the effect of even a minimum dose of tuberculin on a subject which is already attacked with tuberculosis. In such a case the products of the existing tubercle, circulating in the blood and tissues, are often so small in amount, and the system has acquired such a tolerance of them, that there is no manifest disturbance of health, and the animal may even be in excellent condition. But add to this minimum amount of poison already in the system a small quantity of tuberculin, and in ten or fifteen hours the temperature of the patient's body will rise two or more degrees above the normal, and the destructive process going on in the seats of the tubercles will be accelerated. In cattle this is now used as a most valuable test of the presence or absence of occult tubercle. In horses and other animals, the subjects of tuberculosis, "tuberculin" causes the same rise of temperature, and this rise may be accepted as a rule applicable to all classes of animals. In the tuberculous man this action of "tuberculin" is a well established fact, and was made the basis of Koch's employment of this material as a curative agent. The daily use of tuberculin in cases of lupus or other superficial forms of tuberculosis, led to a more active congestion and an earlier molecular death of the tissues of the local tubercle, until these were separated from the living healthy parts, and the progress of tuberculosis in that part was arrested. If there were then no deeper unseen tubercles left in the system, a real cure might be effected in this way. But the cure in such a case was only secured by a temporary aggravation of the disease in its primary focus. If other tubercles existed in internal organs, they, too, had the morbid process aggravated and extended, and the death of tissue increased by the fresh introduction of tuberculin from without. In such a case the increased mass of tubercle—dead and living—remained confined in the midst of the surrounding

tissues, and as the infecting materials could not be cast off and separated from the body, they continued their ravages with an increasing force in proportion to their recent artificial extension.

It is this extension of the tuberculosis under the influence of the toxic products of the bacillus which raises the most important question in connection with the consumption by man of the flesh and dairy products of tuberculous animals, and yet this question has been overlooked by sanitarians in the most unaccountable way. It has seemed enough for them that the living tubercle bacillus did not exist in the juices of the muscles or in the milk. It seems never to have occurred to them that all the soluble poisonous products of this bacillus were constantly circulating in the blood which passes through the muscles, and that they equally traversed the blood vessels of the mammary glands and escaped into the milk. No pathologist can for a moment doubt this general diffusion of these products in the tuberculous subject.

Accepting, then, as undeniable the presence of the soluble chemical poisons in blood, flesh and milk, it follows that those who eat this flesh or milk are continually taking in small doses of tuberculin, and that in case they are already the victims of tuberculosis in however slight or indolent a form, this continuous accession of the poison will rouse the morbid process into greater activity, and secure a dangerous extension.

If we now consider the frightful prevalence of tuberculosis in the human race, that here in New York every eighth person dies of tuberculosis, that in cities like Vienna 85 per cent. of the people suffer from it, and that in our own cities 30 to 50 per cent. contract it at some period of life, we see what a fearful risk is being run by the utilization of the meat and milk of animals so affected, even if it could be shown that such meat and milk were in themselves free from the living bacillus. Such reckless consumption of the products of tuberculous animals can only be looked on as a direct means of sealing the fate of that large proportion of the community which are already slightly affected with tuberculosis.

(To be continued.)

Editorial.

CANADIAN CATTLE AND CONTAGIOUS PLEURO-PNEUMONIA.

FOR some months our pages have testified to the great, nay, painful interest, which has been centred in the dispute regarding the freedom of Canadian cattle from contagious pleuro-pneumonia. Not only are those particularly interested in the cattle trade between this country and the American Continent more especially concerned in the discussion, but the question has become a burning one between England and Canada, and forms the subject of an almost nightly interrogation in our House of Commons, where it is approaching the confines of a party fight. To the veterinary profession it does not present itself as an agreeable or creditable discussion, and a satisfactory solution of the problem would be gladly welcomed. Indeed, it is in the main a purely veterinary question, and is simply conflict of veterinary opinion as to whether certain morbid appearances in the lungs of a few Canadian cattle are really the lesions of contagious pleuro pneumonia, or those of another disease developed during transit across the Atlantic. It would have been imagined that, after half a century's experience of the epizootic malady and the large mortality it has occasioned, everything relating to its pathology and morbid anatomy would have been thoroughly well ascertained. But we fear it is not so, if the present unhappy dispute is to be taken as an indication; for the question really is whether the lesions found at wide intervals of time in the lungs of cattle brought to certain of our ports from Canada, are or are not those of the contagious malady? If they are, then the disease must exist in that colony, for no one nowadays, we fancy, would be bold enough to assert that it could be spontaneously developed on board ship in the short time occupied in steaming across the sea. But the veterinary authorities in our colony assert in the most unqualified manner that there is no trace of the contagion within its boundaries, and they have tracked the origin of every animal reported to have been diseased. There is, they are certain, no contagious pleuro-pneumonia in Canada.

There are certain mysterious features about this affair which cannot but excite wonder. Of the many thousands of cattle sent from the American Continent to Europe, it is only in this country that are discovered rare examples of this supposed contagious disease, and, strange to say, the malady is in its most

incipient form—never a case that has been affected for any length of time, and such as would be likely to occur if Canada were an infected country. At none of the other European ports to which American cattle are admitted, do such cases present themselves. But are the lesions found those of the contagious disease? Here is the diversity of opinion among veterinary authorities, and this is the most remarkable and lamentable part of the business. From it one would infer that naked-eye appearances of diseased lungs, as well as those shown by the microscope, are untrustworthy. If this be so, then the serious reflection arises as to the number of cattle that may have been slaughtered in the "stamping out" process without just cause.

Surely we have more tests in proving the presence of a transmissible disease than simple inspection of doubtful lesions. Experimental pathology and clinical observation ought to have had something to say in the matter. The mere scrutiny of a scrap of lung that may have been lying in spirit or some other preservative fluid for some time, is certainly not a trustworthy procedure in such a case. Inoculation with the fresh lymph from the diseased structure, cohabitation of suspected with healthy animals, and other sensible measures should, one would have thought, been resorted to.

In the meantime, the elucidation of the troublesome business is removed from the jurisdiction of the veterinarians and entrusted to an Oxford professor of physiology and a lawyer. The introduction of the latter into this scientific medical question is somewhat amusing, indeed it would be astonishing were one not aware that for a long time a barrister (as well as naval and military officers), with no medical or veterinary qualification has been acting for the Government in the capacity of veterinary inspector. We are inclined to prate much of our cleverness in the field of comparative pathology and sanitary science, and of our independence as pioneers in research, though difficulty would be encountered in finding much evidence of this in these islands; but after all is said and done, the public appear to place more reliance on the scientific knowledge of medical men and the natural acumen of lawyers, no matter how little acquaintance they may have with animal diseases.

We have only to adduce this instance, and call to mind the composition of the recent Committees appointed by Government to enquire into several of these maladies, in order to assume a less inflated attitude and modify our ultra self-assertion.

THE ACTINOMYCES.

In the *Processi Verbali della Soc. Toscina di Scien. Naturali* for last March, Dr. Gasperini reports some new investigations he had made on the the *Actinomyces* of Harz, the result of which was to lead him to identify the *Actinomyces* with the *Streptothrix*, but he considers the first name to be preferable to the second, for reasons which do not seem to be quite conclusive. However this may be, it appears he includes in the genus *Actinomyces* eighteen different parasitic organisms, the majority of which are still very incompletely known. He distinguishes in the *Actinomyces bovis* four species or varieties; one of these, the *Actinomyces bovis sulphureus*, is probably that which causes the ordinary forms of Actinomycosis; *Actinomyces bovis farcinicus* is the agent in the production of farcy in the ox, studied by Nocard; *Actinomyces bovis albus* has been more particularly found externally in the air, water, forage, and also in an abscess in the dog; lastly, *Actinomyces bovis luteo-roseus* is scarcely more than a variety of the *Actinomyces bovis sulphureus*.

Notwithstanding all the obscurity that still invests the subject, Gasperini thinks that the following conclusions are warranted as the outcome of his labours:

1. The species of the genus *Actinomyces*, are normally produced by free ærial spores (conidiæ); if there is no oxygen or any other cause in operation to oppose the production of ærial filaments, there form in the mycelium toruloid condensations of protoplasm, which are the conidiæ or spores.

2. The actinomycomes of the ox which cannot be differentiated clinically or from an anatomo-pathological point of view, may be nevertheless produced by diverse varieties of *Actinomyces*.

3. The Actinomyces derived directly from the ox, and which cannot be cultivated, becomes capable of a luxuriant development in ordinary nutrient media when it has passed through the organism of a dog.

4. The presence of claviform productions at the periphery of the tufts is in direct relation to the slowness of the pathological process, and with the pre-eminence of the neoplastic type; for the same *Actinomyces*, characteristic of osteo-sarcoma of the jaw, does not develop a trace of the club-shaped bodies at the places where it gives rise to the formation of abscess.

5. According to the organs in which it multiplies or the species into which it is inoculated, the *Actinomyces* produces sometimes one, sometimes another of the diverse anatomo-pathological forms which depend upon it—pseudo-tuberculosis, abscess, neoplasms similar to saromata, granulomes, etc.

6. The kinds obtained from animals become more and more greedy of oxygen in passing through successive cultures, and lose the power of developing when excluded from the air; they become gradually attenuated and are finally inoffensive. Their lost virulence cannot be regained.

7. Certain cases of Actinomycoses in the ox are due to a species (*Actinomyces albus*) which is very widely distributed everywhere, existing in the saprophytic condition, and the actinomycosic infection is subordinate to causes still unknown, which enable it to pass to the parasitic state.

8. When the usually inoffensive micromycetes have in this way acquired pathogenic properties, they become more formidable, so far as the transmissibility of the disease is concerned. The intensity of their virulence varies considerably, according to the manner in which the tissues react; and a very extensive clinical polymorphism is remarked, depending upon the parts into which they are introduced and their virulence.

9. The species of this group have been found to be spontaneously pathogenic in herbivorous and omnivorous, as well as in carnivorous animals, and, consequently, without being subordinate to the mode of nourishment.

10. Every solution of continuity of the skin or mucous membranes may

serve for the admission of the *Actinomyces*, the spores of which have the soil, water exposed to dust, and the open or confined air, for their habitat. The acorns and husks of barley and other vegetable matters may be the vehicles of the morbid agent, and besides, produce solutions of continuity by which this may enter the body.

11. According to the physio-chemical properties of the medium in which they grow, the species or varieties of the *Actinomyces* are capable of assuming variations in their form, thickness, the richness of the pellicles or colonies, isolated or confluent, which they develop, as well as in their power or powerlessness to produce ærial spores or to colour the cultures. They are extremely delicate with regard to the slightest change in the substratum. A feeble acid reaction, as the author has demonstrated in the case of *Actinomyces chromogenus*, is the most favourable condition for the manifestation of colours, and these are most displayed by successive cultures in ordinary starch, and in agar glycerine there is an abundance of oxygen in contact with the micromycetes.

12. The cycles of variations proper to each *Actinomyces* furnishes intermediaries between the various species, though it is always possible to establish the distinctive characters of each species and the limits within which they vary.—*Revue Vétérinaire.*

THE JEWISH METHOD OF SLAUGHTERING ANIMALS.

DR. DEMBO, physician to the Alexandra Hospital, in St. Petersburg, has recently published the results of his investigations in connection with the various methods of slaughtering animals which are at present in vogue. In compliance with a request from the "Society for the Prevention of Cruelty to Animals," in St. Petersburg, he took up this question in January, 1891, and in October of the following year he was one of a Special Commission appointed to consider the matter, which Commission pronounced its verdict in favour of the Jewish method of slaughter. So interested was Dr. Dembo in the question at issue, that he has since visited a large number of the principal abattoirs in Germany and Switzerland; and more recently some of those in France and in this country. These observations have been further supplemented by physiological and chemical experiments of the highest value and importance. The method of stunning the animal before bleeding it, as conducted in the Continental abattoirs, presented so horrible a picture, that Dr. Dembo determined to visit this country, where he supposed this method would be seen in greatest perfection. But what amount of perfection may be claimed for it here may be gathered from the following account of one of many such spectacles which Dr. Dembo witnessed. At a certain slaughter-house no fewer than seven blows were delivered on the head of an ox before the animal lost consciousness. After the first two or three blows, the animal got its head a little free, and repeatedly tried to dodge the axe, so that it became difficult to aim the blow accurately, and the whole procedure of stunning occupied no less than ten to twelve minutes, as timed by Dr. Dembo, who stood watch in hand. So much for our method of slaughter; what of our abattoirs? Dr. Dembo considers them a disgrace to our country. In all his travels he has never seen anything, even in the smallest villages, to compare with the insanitary condition of the majority of our slaughter-houses. That an opinion of this kind should be formed by such an authority is so great a disgrace to our country that we are sorry that duty compels us to record the fact.

In his book Dr. Dembo deals with the problem as to the best method of slaughtering animals, from three standpoints—humanity, hygiene, and economy. At the outset of his consideration of the subject from the humanitarian point of view, he points out that two categories of methods

of slaughter may be considered—simple bleeding (the Jewish method), and previous stunning of the animal to be slaughtered. The first question which naturally arises is, What length of time elapses before consciousness is lost when either method is practised? As a result of his observations in abattoirs, and of direct physiological experiments conducted in the laboratory, he concludes that consciousness is lost in three to five seconds by the Jewish method, owing to anæmia of the brain. The objection that has been put forward, that after the carotids have been divided the brain still receives blood through the vertebral arteries, has been controverted on experimental evidence. It is pointed out that at best the amount of blood which the brain receives from the vertebral arteries is insignificant, and that it is further diminished owing to the great fall of blood pressure consequent on the escape of blood from the divided carotids, so that next to no blood reaches the brain by way of the vertebrals. Further evidence is adduced in support of the correctness of this view, from the fact that vertebrals have been ligatured in man without any particular inconvenience being experienced, while simple compression of the carotids in the neck produces loss of consciousness. Other more trivial objections are equally satisfactorily refuted; and, finally, as we have more than once had occasion to point out, Dr. Dembo insists that a cut made with an exceedingly sharp knife is almost painless, and that particularly must this be the case in the neck, where so few sensory nerves of any size are divided.

In dealing with other methods of slaughtering animals, he finds that of the hundreds of instances in which he has seen the operation of stunning carried out, the average number of blows necessary to produce loss of consciousness has been five to six. Allowing a second for each blow, and for each interval between the blows, the time occupied would be 10 to 12 seconds; but seldom was it Dr. Dembo's good fortune to be able to count the time thus occupied by seconds. The difficulty of stunning an ox is ascribed to the small size of the brain as compared with the large size of the head and the thick skull, and evidence is adduced that even in man, whose brain is large and whose skull is comparatively thin, instances of severe injury to the skull without loss of consciousness occur, and that even when the brain itself has been injured. Further, a rabbit weighing 1,950 gr. not only remained standing, but was conscious after receiving a blow on the front of the head with an iron hammer weighing 650 gr., the blow being delivered with all the force that the operator could command. But even after the animal has been stunned, it not infrequently happens that so much time elapses before the stab with the knife is given, that the animals show distinct signs of consciousness when the knife is plunged into them, and have even been heard to groan with pain.

Dr. Dembo has still greater horrors to describe in that portion of his book which deals with various masks that have been employed; their common object is to facilitate the operation of stunning the animal. It will be sufficient for us to record his experience of the results obtained with one of these. The object of Bruneau's mask is to allow an iron bolt to be driven into the brain; and in one instance no fewer than twelve blows were necessary to drive this bolt through the skull. In connection with this and certain other masks, it is usual to pass a long Spanish cane into the hole in the skull, with the view of destroying the medulla oblongata, a procedure which occupied eight minutes in one instance; and even then, on *post-mortem* examination, the medulla oblongata was found to have been absolutely untouched. The extreme difficulty of directing the cane accurately towards the medulla is insisted on, and instances of brain injury in man are cited as evidence of the inutility of the method, unless the medulla oblongata can be directly injured.

As to the method of sticking a dagger between the occipital bone and the atlas, for the purpose of destroying the vital centres in the medulla, Dr.

Dembo's anatomical investigation of the conformation of these parts in the ox has proved that the spinal cord is injured far below the medulla by such a procedure, and that to injure the medulla oblongata in the way the blow is given is an anatomical impossibility. The method thus becomes a very cruel one, for the posterior nerve roots are injured, giving rise to great pain, and the animal lies paralysed in all its extremities, and yet still perfectly conscious.

The impracticability of killing animals by electricity and of guillotining them is discussed; and it is pointed out that killing by narcotics will be discarded owing to its costliness, and the alterations which may be produced in the meat, in which connection he records an instance in which certain animals became narcotised by eating the flesh of an animal to which chloral had been administered during life. Thus Dr. Dembo concludes that from a humanitarian point of view none of the practicable methods of slaughtering animals can compare for one moment with that in vogue among the Jews; and that if the word "ideal" could be employed in connection with the killing of any living being, it would be applicable to this method of slaughter.

In considering the question from the hygienic standpoint, Dr. Dembo first deals with the amount of blood that can be drained from the animal, and the amount that remains in its tissues. An animal killed by the Jewish method, he finds, loses 72 per cent. of blood, while only 28 per cent. remains in the tissues; when death is produced by stunning before the animal is bled, only 28 per cent. escapes, while 71 per cent. is retained; and when stunned and the neck vessels are subsequently divided 46 per cent. of blood escapes, while 54 per cent. is retained. Vasomotor paralysis is held responsible for the large amount of blood retained in the tissues when stunning is resorted to; and this is urged as a reason against the method of dividing the spinal cord by a stab between the occipital bone and the atlas, as considered from the hygienic point of view.

The next point dealt with is as to the rate at which *rigor mortis* sets in, and it is pointed out that the sooner this is established the longer does the meat remain sound. Two artificial methods of hastening its onset are discussed and shown to be prejudicial to the meat, whereas a third, consisting of rendering the flesh acid, is recognised as of great advantage. Not only does *rigor mortis* set in more rapidly in an animal killed by the Jewish method, but in certain observations made by Dr. Dembo, whereas all *post-mortem* rigidity had disappeared in thirteen days when the stunning method had been adopted, it was eighteen days before it had disappeared after the Jewish method of slaughter.

By chemical analyses he found that the amount of ammonia liberated by flesh in the same time, and under similar conditions, was far greater in stunned animals. The results of his analyses prove that the flesh of animals slaughtered by the Jewish method will keep two days longer than any other flesh in summer. The conditions obtained by this method are detrimental to the development of lower organisms, and prevent decomposition taking place for a longer time. The reasons for this are: that less blood remains in the organism; the more rapid the loss of blood the more quickly lactic acid is formed; the epileptic convulsions hasten the formation of lactic acid in the flesh, diminish the alkalinity of the blood, assist in the emptying of the small blood vessels, and hasten the onset of *rigor mortis;* and more water is drained from the muscles, so that in two hours the flesh of such animals is as firm as that of animals killed by stunning methods is ten hours after death. These and other physiological and chemical problems which have engaged Dr. Dembo's attention, lead him to look on the Jewish method of slaughtering animals as far superior to any other when viewed from the standpoint of hygiene.

Space does not permit of our going more fully into the various problems

which have been raised in support of the *shechita* on physiological and chemical grounds; nor can we do more than state that from the standpoint of economy also this method is shown to be the most advantageous.

No more complete answer could have been given to those who condemn the *shechita* as barbarous, and our only regret is that, as the book is written in the German tongue, it is inaccessible to the majority of people in this country An English translation of Dr. Dembo's work would, we feel sure, be most acceptable to those who are not familiar with German, and who nevertheless are anxious to satisfy themselves as to which is the best method of slaughtering animals.—*British Medical Journal.*

ARYTENOIDECTOMY FOR ROARING.

In the American *Veterinary Magazine* for last February, Professor Harger relates nineteen cases of roaring in horses which were operated upon by Dr. Butler of Minneapolis, from 1889 to June, 1893, the operation being performed according to Fleming's method. Of these nineteen cases eleven resulted in a complete cure, among them being horses of various kinds—general service, trotters and race horses—which subsequently did their work successfully. One horse which was operated on in August, appeared to be cured until the end of October, when it was attacked with laryngitis, which was badly attended to, and the animal died of asphyxia. On examination after death, the larynx was found to be healthy, but a fungoid tumour was discovered involving the fourth and fifth rings of the trachea. Seven horses remained roarers, though the noise they made was less than before the operation, and its recurrence was coincident with attacks of laryngitis and influenza. The last case operated upon was too recent to arrive at any conclusion as to the result.

Harger is of opinion that, if the operation is properly performed, the consecutive treatment what it ought to be until cicatrisation of the wound is completely established, and the animal carefully exercised and worked until the larynx has accommodated itself to its changed conditions, no fewer than seventy-five per cent. will be cured, and the horses be able to resume their usual duties.

FLOATING KIDNEY IN A DOG.

Udrischi, in the Roumanian *Veterinary Review*, states that in October, 1893, a small, common-bred bitch, five years old, was brought to the clinic of the Veterinary School, exhibiting marked symptoms of enteritis. On examining the abdomen, which greatly increased the pain, there was felt, on the left side, a round body about the size of a pigeon's egg, and which was movable. The effects of the exploration caused the animal to vomit and be otherwise distressed, and in two hours afterwards, the animal having continued to lie on its left side, it died quite tranquilly. The autopsy revealed the usual lesions of enteritis, and, in addition, the liver was seen to be very much enlarged, and of a deeper colour than in health. The periton was very congested in patches, marked by hæmorrhagic spots, and torn to an extent of about five centimetres in the region of the kidneys. One of the kidneys, the left one, was floating among the intestines, being suspended only by its ureter, which was healthy. The margins of the wound in the peritoneum gave evidence that it was of quite recent origin. The right kidney was in its ordinary situation, and showed nothing abnormal.

In attributing the death of the bitch to enteritis, Udrischi is of opinion that the left kidney must have entered the peritoneal cavity through the tear in that membrane, and that this rupture was produced by the disordered and violent movements which the animal made, owing to the pain of the enteritis.

INFECTIOUS AGALAXIA OF THE GOAT.

In the *Landwirtschaftliche Jahrbuch* for 1893, Professors Hesse and Guillebeau, of the Berne Veterinary School, report observations they have made upon an epizootic disease of sheep and goats which Brusasco described in 1876, under the designation of "Contagious Agalaxia" or the *mal de sec*, and which has also obtained notice from Metaxa, Marra, Preste and Marcone. The disease is located in the udder, the eyes and the articulations, and is also indicated by metastastic abscesses.

The milk coagulates readily and entirely, or it forms small clots; it is white, or whitish-grey, somewhat viscid, and when allowed to stand for some time there is a greyish precipitate formed of pus. Above this deposit is extended a thin red layer rich in blood-globules, and above it is the normal-looking milk. A chemical analysis has revealed a diminution in the fatty matter, sugar, phosphoric acid, lime salts, magnesia and potass, while the sodium chloride is increased. Cheese made with such milk is not sound, as it is pierced with numerous holes on its surface, and sometimes blown out with the gas that is developed in it.

The secretion of milk is considerably diminished during the course of the disease, and may almost, or even entirely cease. From two litres per day, which is the average amount in health, it may be as little as 25 cubic centimetres. The mammæ become completely atrophied and reduced to the volume of a nut, and they may also be invaded by abscesses. The lymphatic glands are not tumefied.

The ocular alterations are observed in about one moiety of the cases. The two eyes are generally affected, either together or one after the other. There is at first conjunctivitis, and, lastly, parenchymatous keratitis, with the formation of vessels, ulceration, staphyloma, perforation, and prolapsus of the iris. according to Dr. Pfluger, professor of ophthalmology in the Bern Faculty of medicine, this ophthalmia has much analogy with the keratitis that sometimes appears in man during influenza. Hess and Guillebeau have not noticed the cataract alluded to by Brusasco.

Of 28 goats under observation, 16 were attacked with arthritis. Ten had only one articulation affected, five had two, and one had three joints involved. Of the total number of articulations diseased—23—the carpus was the one in 15 cases, the elbow in one, the tarsus in two, the femoro-tibial joint in one, and the hip-joint in four. There was tumefaction, heat, and pain in the region. The lesions found at the autopsy were those of fungoid arthritis. In some animals there were only traces of recent synovitis. Two goats had synovitis of the sheaths of the extensor tendons of the phalanges, which recovered spontaneously.

Towards the fifth or sixth week of the disease, cold abscesses sometimes appeared in the parotid glands, the posterior mediastinum, the mammæ, or the posterior crural muscles.

According to Brusasco, the malady is readily transmissible. Nevertheless, Hess and Guillebeau allowed four healthy goats among diseased ones for nine weeks and they were not affected. In the same way, the injection of milk from affected goats into the mammæ of healthy ones, as well as the subcutaneous injection of pus from the abscesses, has yielded no result. The pathogenic agent has yet to be discovered, as well as its mode of action.

FUNCTION OF THE THYROID GLAND.

Hurthle, in the *Deut. med. Wochenschrift* for March 22nd, remarks that the view representing the gland as destroying or altering some substance dangerous to health, or more probably secreting some substance necessary to health, is the one most generally accepted. This chemical theory is supported by facts observed (1) on extirpating the gland, and (2) on administering thy-

roid extract in certain cases. The thyroid is a ductless gland connected with the rest of the body by blood and lymph vessels and nerves. Two questions must be answered: (1) as to the evidence of production of the above named substance; and (2) as to its absorption. Two kinds of cells have been described in the thyroid, namely, colloid and chief cells as well as transitional forms. The production of secretion may be observed along with the preservation or destruction of cells. The author's view is that the destruction of cells peculiar to itself furnishes a secretion different from that of the colloid material. In his experiments stimulation of the nerves supplying the gland revealed no change in the cells. In animals from which five-sixths of the gland had been removed, the remainder showed after ten days microscopical evidence of increased secreting activity. Drops of colloid material were present in the cells themselves. In a dog whose common bile duct had been ligatured, the tying of the thoracic duct produced a marked filling of the lymph spaces as well as of the gland epithelium with colloid material, whereas with ligature of the thoracic duct alone no such appearance was evident; hence the biliary constituents probably stimulate the gland. As to how the secretion is carried off, the follicle wall often ruptures with the disappearance of the cells, and the colloid gets into the lymph spaces. This however, is not the only way, since after ligature of the common bile duct no such rupture was evident, yet colloid was also present in the lymph spaces. By the intermittent injection of the lymph channels the injected material could be made to penetrate into the cavity of the follicle. Colloid material can also be seen between the cells. It cannot yet be decided whether the colloid is taken up by the lymph vessels or veins. Tying the thoracic duct, however, does not lead to an accumulation of colloid in the gland.—*British Medical Journal.*

ANTISEPTIS IN VETERINARY PRACTICE.

A MODIFICATION of the ordinary practice of antiseptis is discussed in the *Recueil de Médecine Vétérinaire* for last April. This consists in making use of antiseptic ointments instead of the solutions of medicaments usually employed. The base of these ointments is vaseline which, according to the authors of the article, exceeds everything else in maintaining any antiseptic substance in contact with the wound. Several ointments are made up with the vaseline, according to the different requirements of practice. The following are some of these:—

No. 1 Ointment.

Vaseline	100 parts.
Tincture of Iodine	16 „
Crystallized Carbolic Acid	8 „
Tannic Acid	8 „

The Same, but Milder.

Vaseline	100 parts.
Tincture of Iodine	8 „
Crystallized Carbolic Acid	4 „
Tannic Acid	4 „

No. 2 Ointment.

Vaseline	100 parts.
Bichloride of Mercury	1 „

No. 3 Ointment.

Vaseline	100 parts.
Cresyl	3 „

No. 4 Ointment.

Taseline	100 parts.
Crystallized Carbolic Acid	3 „

In the employment of these ointments, the hair is removed from the part, the skin washed with soap and water and disinfected by means of bichloride of mercury in alcohol (5 per cent.), and covered with a thin layer of No. 2 Ointment. The instruments are rubbed with No. 3 Ointment, which does not affect their cutting edge. For dressing the wounds, peat wool is preferred, it being previously rendered asceptic by heat. Catgut is used for sutures.

The operation is performed through the ointment, which is renewed on the surface as it melts, so that all the wound will be well covered by it. When the operation is finished, several pints of a disinfecting solution are used to wash the traumatism. Dressings are made wiih any of the ointments covered by peat wool which is maintained by a linen bandage. The first dressing is usually removed during the following day, and replaced by another which is left on for four days, subsequent dressings being made after the same interval.

The ointment which has yielded the best results in the hands of Fourié and Calvé is No. 1 ; No. 2 being colourless is that which is employed to cover the part to be operated upon. Six examples are given in which this method was adopted, and the result was perfectly satisfactory.

THE NUCLEI OF ANTHRAX SPORES.

Ilkewicz, in the *Centralbl. f. Bakteriologie* for March, has been enabled by the following method, the principle of which is due to Kolossoff, to stain structures which he regards as nuclei within the spores of anthrax bacilli. The method is also very suitable for staining bacteria for photographic purposes. It is as follows:—Cover-slip preparations are made, with the precaution that none of the culture medium is removed with the bacterial growth, as it becomes stained in this process. The preparations are fixed in the flame, and stained in a watch glass with the following solution for one or two minutes, the fluid being warmed until steam rises: aq. sol. osmic acid ½ per cent., 7 c.cm.; formic acid, 3 c.cm. The coverslip is then transferred for one or two minutes to a "reducing fluid" (*a* or *b*) for deoxidation of the osmic acid. The reducing agent is prepared as follows: Dissolve tannin, 30 g., in aq., dest., 100 c.cm; allow to stand twenty-four hours in an open vessel; filter and add to the filtrate pyrogallic acid 30g., dissolved in aq. dest. 100 c.cm. To this mixture add glycerine 50 g., alcohol (95 per cent.) 100 c.cm., aq. dest. 250 c.cm. Reducing fluid (*a*) consists of equal parts of the above solution and of the following mixture: pyrogallic acid 8 parts, citric acid 3 parts, sodium sulphite 17 parts, aq. dest. 150 parts. Fluid (*b*) is prepared by adding to 10 c.cm. of the last-mentioned mixture (that is, the second constituent of *a*) the following solution: alcohol 3 c.cm., tannin solution (tannin 20 parts, water 80 parts) 2 c.cm., glycerine 1 c.cm. Either of these reducing fluids may be used, one often succeeding where the other fails. For use, warm until steam rises. Wash in distilled water, and then repeat the whole process (passing through the osmic acid and the reducing fluid) to get intense staining. Wash again in water, dry, mount in balsam or glycerine. The protoplasm of B. anthracis is stained dark grey, showing a granular structure. The spores are either colourless or pale grey; they are seen to be of three sizes—large, medium, and small. Some are homogeneous, others contain the structures (stained black), which are regarded as nuclei. Some of the spores contain a single nucleus; these Ilkewicz regards as ripe. Others show no nucleus proper, but appear granular; they probably represent a stage of nuclear division. Others again show two nuclei separated by a thin septum, representing complete division of the nucleus, but incomplete division of the spore. A photomicrograph illustrating these points is furnished with the paper.—*British Medical Journal.*

PSEUDO-TUBERCULOSIS IN A LAMB, DUE TO THE *CYSTICERCUS TENUICOLLIS.*

In the *Clinica Veterinaria* for May, Signor Benedictis, Sanitary Inspector of the Abattoir at Rome, has an article on the above subject. On opening the carcase of a lamb in poor condition, the parietal peritoneum was found to be studded here and there with somewhat hard nodules about the size of a chick pea and adherent to the membrane. The liver was attached to the diaphragm by the whole of its convex surface, and its ligaments were also bound to other adjacent parts of the peritoneum. The right portion of the diaphragm was thickened to an extent corresponding to the liver, and showed the same disseminated nodules, the size of an ordinary pea to that of a chick pea; these were hard and prominent, and still retained a little of the hepatic parenchyma. On incising some of the nodules, it was noted that they had undergone fatty degeneration, and in a small number caseous degeneration had set in. The lesions resembled very closely those of tuberculosis of serous membranes, but the rarity of this disease in the ovine species led Benedictis to make a more minute examination, and this led to the discovery, especially in the circumrenal fat, of real cysticerci in the vesicular condition, the scolices of which had all the characters of the *Cysticercus tenuicollis.—Revue Vétérinaire.*

VETERINARY MEDICINE IN HUNGARY.

Dr. F. Huytra has given some interesting information with regard to the progress of veterinary medicine in Hungary in the annual report recently issued for 1892 (*Tahresbericht über das Veterinärwesen in Ungarn*). Like similar reports of the German schools, this first describes the position of the Veterinary Academy at Budapest. It would appear that in 1892 the number of students attending it was 265, and of these 204 were studying veterinary medicine, the remaining 61 being civil or military horse-shoers qualifying for certificates of competency. Unlike the majority of Continental Schools, this has no consultation clinic, though it maintains what is designated an ambulatory clinic, which visits sick animals in Budapest and its vicinity; there is, in addition, a practical course of instruction given at the Royal Farm of Godollo, where there are 110 horses, 1,200 cattle, and between 5,000 and 6,000 sheep kept. In order to study outbreaks of contagious disease and to practise protective inoculation, the four-year students make special excursions under the direction of a government veterinary surgeon.

In the second section of the report, information is afforded with regard to the health of the domestic animals in Hungary. From this we gather that the losses caused by disease was estimated at £245,126, of which the damage caused by contagious diseases amounted to £119,600. Symptomatic anthrax caused the death of 328 horses, 2,057 cattle, and 1,290 sheep. There were 110 cases of rabies among dogs, 683 cases of glanders, 613 cases of contagious pleuro-pneumonia, 9,554 cases of sheep variola, 11 cases of horse syphilis, 28,954 cases of swine erysipelas, of which 22,549 died, and 237 cases of buffalo disease. Foot-and-mouth disease affected 84,659 cattle, 33,176 sheep, and 28,625 pigs.

Preventive inoculation was continued in this, as in previous years, and was even more extended. Every year anthrax fever and the swine disease, both of which had previously desolated Hungary, were becoming less frequent. In 1892, as a preventive of anthrax, there were inoculated 3,838 horses, 54,633 cattle, and 286,310 sheep; the losses from this operation were, for horses, 0·12 per cent., for cattle, 0·21 per cent., and for sheep 0·61 per cent. Protective inoculation for the swine disease was increasing, as the number operated upon in 1892 was 462,310 against 351,959 in 1891; the losses after inoculation during the course of the year, were only 0·45 per cent.

THE MORBID ANATOMY OF RABIES.

GOLGI, in the *Berl. klin. Wochenschrift* for April, points out that his method is not only intended for the study of the normal structure of the nervous system, but is also useful in pathological investigation. He draws attention to the following morbid changes in rabies: (1) Changes in the structure of the nucleus. All the various phases of karyokinesis may be simulated, yet no true nuclear division may take place. (2) Changes in the body of the cell, such as vacuole formation, bladder-like transformation of the cells. Changes may also be recognised by methods directed to the study of the outer form of the cell. Here varicose appearances of the cell processes may be seen. Granular fatty changes may also be present. An important change lies in the displacement of the nucleus. The periphery of the cell becomes homogeneous. Granular fatty changes are also seen in the neuroglia cells. (3) Changes in the intervertebral ganglia. The author would look upon these anatomico-pathological changes found by him as characteristic, while here not only the sum total of the changes, but also their order of occurrence and mutual interdependence, are taken into consideration. The morbid process is a parenchymatous encephalo-myelitis of which the exact exciting cause is as yet unknown. The changes are thus grouped: (1) Appearance of nuclear chromatin, peculiar cell division (neuroglia cells and vascular endothelium), nuclear movement also in nerve cells, diffuse vascular distension, and leucocyte infiltration revealing a condition of irritation; (2) swelling, vacuolation, changes of form, granular appearance of nerve cells and neuroglia; and (3) more advanced changes in the nerve elements. The changes in the first group may be seen as early as five days after inoculation.—*British Medical Journal.*

A NEW APPARATUS FOR THE SLAUGHTERING OF CATTLE.

THERE was an interesting trial at the abattoir, Water Street, Manchester, a few days ago, of a new pain-saving appliance in the slaughtering of cattle. As is well known, the Jewish religion requires that all animals killed for food shall die through the emission of blood, and, consequently, instead of a beast being pole-axed, its throat is cut by a specially appointed person. In the past it has been the practice to get the animal in the requisite position for operating upon by drawing the head to the ground, and then by means of ropes and chains worked through pulleys and attached to the legs, throwing it on its side. Much pain was obviously inseparable from this process. The new plan, which has been patented by the inventor, Mr. Henry Harris, of Great Prescott Street, London, does away with this violence, and will in the future probably be generally adopted by those engaged in the slaughter of cattle, in accordance with Jewish principles. Under the new system, a board 8ft. long and 5ft. wide is hinged to a wall and worked by ropes running through blocks, some seven or eight feet from the ground, and attached to the wall. The animal to be slaughtered is placed on the board, which lies flat on the ground; its head and feet are shackled in the ordinary way, and then three or four men, by pulling the ropes, draw the board up until it reaches a certain angle, when the cow's legs of necessity give way, causing it to recline with its side against the board. The ropes are now let go, and the board falls to the ground with the beast on its side. Besides being more humane, it is claimed that by using the invention under notice the killing can be done far more expeditiously. The experiments seemed to give general satisfaction, and were witnessed by, among others, Sir B. W. Richardson, the well-known medical authority, who has of late years taken great interest in the slaughtering of animals for human food.

VETERINARY SURGEONS IN THE UNITED STATES OF AMERICA.

THE social position of Veterinary Surgeons in the United States for a long time was not an enviable one, and was certainly a long way from what it ought to have been; it was, in fact, not unlike what it was in this country until recently. Receiving no encouragement or protection from the Government, and left to compete with empiries of every kind, it has had an uphill battle, from which, however, we are delighted to observe, it is gradually emerging victoriously.

In the army more especially has the position of the Veterinary Surgeon been most lamentable. Ranking with non-commissioned officers, and compelled to associate with them in barracks and on parade, a feeling of degradation must have been uppermost in the mind of men who should have been in possession of commissioned officers rank. Inferior as has been the grade of Veterinary Surgeons in the social hierarchy of this country for a long time, it has never been so low in our army as it now is in that of the United States; for from the very commencement British Veterinary Surgeons held commissioned rank and held the position of gentlemen. It is, therefore, with much concern and pleasurable anticipation that we observe an agitation prevailing with the object of placing veterinary surgeons in the United States army in a position more worthy of their profession, though certainly the concession asked for is almost trifling. The petition to the Committee on Military Affairs of the House of Representatives at Washington is as follows:—

"We, the undersigned, citizens of————County, State of————respectfully petition your honorable Committee to approve the passage of an Act to fix the pay, allowances, pensions, retirement and rank of the veterinarians of the United States Army.

"*BE IT ENACTED by the Senate and House of Representatives of the United States of America, in Congress assembled:*

"SECTION I. That the United States Army Veterinarians shall have the pay, allowances, pensions, retirements, tenure of office and the relative rank of Second Lieutenant of Cavalry; their appointment to date from original entry into the Army *Provided*, however, that hereafter, candidates for the United States Army Veterinary Service shall comply with all the preliminaries now required from candidates for 'The Army Medical Corps,' and shall pass such examinations as the Secretary of War may direct.

"SECTION II. This Act shall be in force and effect from, and after, its approval.

"SECTION III. All Acts inconsistent with this Act are hereby repealed."

The civilian Veterinary Surgeons are also commencing to bestir themselves in their own interests, and in several of the States they have obtained legal protection for their title. Quite recently a law to this effect has been passed for the State of Virginia, and through the influence and exertions of our esteemed friend, R. Ward, F.R.C.V.S., of Baltimore, and others, a similar concession has been secured for the State of Maryland. All this marks progress, and eventual emancipation from most uncongenial bondage.

THE FORTHCOMING INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY.

THE Organizing Committee of this Congress, which is to be held at Budapest, under the patronage of the Emperor of Austro-Hungary, from the 1st to the 9th of September next, have elected Dr. Fleming, C.B., Honorary President of the 17th Section—that dealing more immediately with the relations between animals and mankind in regard to disease.

THE DIFFICULTY OVER CANADIAN CATTLE.—COLONIAL OPINION.

(THE following discussion of this much debated question appeared in *St. James's Gazette* of June 15th, and is from the pen of its own special correspondent at Montreal).

On the arrival of the Allanliner *Sardinian* at Rimouski, the mail port of the St. Lawrence, late in the evening of June 3rd, I was not a little surprised to learn from cables in the local papers that the Canadian cattle question had all at once become a burning one at Westminster; and that during the pleasant voyage just then drawing to a close my courteous fellow-passenger, Professor McEachran, of Montreal, had, metaphorically speaking, been dragged by the ears before the bar of the House of Commons. The cable told us that the member for West Belfast "wanted to know, you know," the truth as to Professor McEachran's *bona fides* in asserting the non-existence of pleuro-pneumonia among Canadian cattle; and whether, while chief adviser of the Dominion Government in their protest against the British embargo, the Professor was not also manager of the great Walrond Cattle Ranch—consequently an interested party. This question as your readers—at any rate the section of them interested in agriculture and live stock—are aware, followed upon the various interrogations in the House of Commons as to the Canadians' cattle grievance, which over here is a matter of serious import. The British Government had shown some disposition to admit a departmental blunder; but the latest cable I have seen at Quebec leaves it in doubt whether the embargo will in reality be removed, as had been hoped. The strong feeling of resentment which the alleged justices has, I am assured, created in all parts of the Dominion will, therefore, deepen rather than disappear.

Even such a hint as that might not, of course, at once frighten Mr. Herbert Gardner into abject humiliation and repentance; but it will be a pity to let small sores grow into big ones by showing a mere contempt of Canadian feeling. To learn the truth of the matter I made some inquiries.

The Canadian Veterinary Adviser.

At once it may be said that Professor McEachran, who is almost as well known and as highly respected in England and Scotland as he is all over North America, is not at all the kind of official who is vulnerable in the way so pointedly suggested by the member for West Belfast. Dr. McEachran is Chief Inspector of Stock for the Dominion Government, and has occupied that position for fifteen years, having been, in fact, the first to suggest and organize the cattle quarantine for Canada. He is manager of the Walrond Ranch Company, the largest in Canada. Also he is Dean of the Faculty of Comparative Medicine and Veterinary Science at the famous McGill University, and is a Fellow of the Royal College of Veterinary Surgeons, besides holding numerous other degrees. His thirty years' experience on the one hand, and on the other the high respect in which independent people assure me he is held in his own country, place him quite above any suspicion, such as the personal question in the House of Commons implies in its terms.

Nevertheless, I put the question as to the ranching self-interest point-blank to the Professor.

"As a matter of fact," he replied, "our interest as a ranching company lies the other way. The embargo has been a benefit to the ranch-men, not an injury. Since Canadian cattle were refused entry the ranch cattle have brought higher prices in the English market; if I had been biassed in any way by reason of my connection with the ranch, it would be to keep the embargo on."

"You get your cattle into England in spite of the embargo, then?"

"We slaughter them at the port. That suits us, because, on account of the ranch cattle being so wild, they cannot, embargo or no embargo, be taken into the country."

The Alleged Departmental Blunder.

"There is no question whatever," Dr. McEachran went on to say, "that the professional advisers of the Board of Agriculture committed a serious scientific blunder in mistaking what may be called transit pneumonia—an inflammation of the lungs resulting from the hardships of the rail and steamboat journey—for contagious pleuro-pneumonia. It is nothing of the kind. Its non-contagious nature is proved beyond doubt. Out of 763 animals on the same ship only this one case was suspected, and not one other was infected; and out of over 300,000 Canadian cattle sent to England in the last three years there have been but five cases of suspicion."

"It appears that your Department used strong terms in the report forwarded to the Board of Agriculture."

"We certainly did not mince matters, after making the most careful inquiries possible in Canada. We knew that under our rigorous system of inspection and quarantine cattle disease could not possibly exist in the Dominion without our knowledge; and on comparing the results of my own investigations with those made by the authorities in London, I was perfectly confident as to the mistake that had been made. We on this side proved conclusively that the professional reports made in England were wrong; and the profession of Great Britain is now with me—at any rate, the majority of the leading members of it."

"Did you see the Government authorities in England on your recent visit?"

"My visit to England had no official connection with the matter, for we had done all that we could, and all that we thought we were called upon to do. But I saw all the professional officials of the Board of Agriculture and the chief members of the profession in England and Scotland."

How the Dispute Originated.

"May I ask how the dispute arose?"

"The attention of the veterinary inspector at the port was called to the lungs of an animal which had been passed on landing at Deptford and afterwards slaughtered. They were sent by him to the Department in London without comment. The professional staff of the Board of Agriculture took several weeks to make up their mind what the disease was; but the Board decided to prohibit the landing of Canadian cattle except for slaughter. There were considerable differences of opinion among the experts as to what the disease really was; but a consensus of opinion that it was not contagious pleuro-pneumonia. We proved our case out of Professor Brown's own mouth. Copies of our reports *in extenso* were sent to England; and in addition to that copies were sent of every report of investigation of disease made by the Canadian Department of Agriculture for fifteen years past. All of these went to prove that pleuro-pneumonia does not exist in Canada. A convention of the veterinary profession held in October last in Chicago unanimously expressed their opinion that pleuro-pneumonia does not exist in Canada, and had never existed in Canada except in 1886, when it was discovered in the quantine at Quebec in some cattle imported from Scotland, when and where it was stamped out effectually. The English Board, however, in their communications with the Dominion Government, insinuated that we had reliable information, but had suppressed it. We asked them, upon that, to be good enough to furnish the name of any party whom they considered reliable whose information we had suppressed. They have failed

to give the name we demanded, or to prove their case or justify the continuance of the embargo in any way."

The Injury to Canada.

"Has it done much harm to the Canadian trade?"

"It has only lessened the export of cattle to England by about 9,000, and there is some question whether it would not pay us better to keep our 'stockers,' and our hay too, at home. But while it affects the Canadian cattle trade, and affects it seriously, it probably affects immigration still more seriously, because one great inducement which the best class of mixed farmers had in coming to Canada was the fact of there being no risk from contagious disease in the country. There is still no such risk; but this action by the British authorities has given us a bad name, with the proverbial consequence. It has also affected the Canadian trade with the United States: as while the American Government are well aware, and their officials admit, that no contagious disease exists in Canada, yet they have taken advantage of the blunder made by the English Board of Agriculture, and have also placed a quarantine of 90 days on Canadian cattle. These injuries to Canada are felt very keenly by the Canadians as a matter of very great injustice to the country. And any insinuations of further doubting the reports of the Canadian Government will certainly not lessen the feeling of dissatisfaction which exists throughout the whole agricultural population of Canada—smarting, as they do, under what is so well known to be most unjust treatment."

The question on your side the water would seem to be, whether it is expedient that electoral strategy should prevent a fair review, and possibly removal, of the undoubted grievance which Professor McEachran thus mildly exposes.

The following appeared in the *Montreal Gazette* of June 12th:—

"Dr. Duncan McEachran, Dean of the Faculty of Comparative Medicine and Veterinary Science of McGill College, in speaking to the *Gazette* with reference to the cablegram which appeared in yesterday's issue, said:—'There were shipped from Port Perry, through Mr. Jack, 68 cattle on the 1st May, and 41 on the 6th May. Out of the total 109 shipped, 20 were sent to England on the steamship *Parkmore* and 40 on the steamship *Toronto*. And it must be remembered that those on the *Parkmore* were in contact with those of the *Toronto* for several days. The balance of the number were bought by butchers in Montreal, and of that balance not a single diseased animal was found, although they had formed part of the 109, and had all been in contact in the yards together. Of these cattle 33 were purchased by Mr. Jack, and the balance by Mr. A. Bonguard, of Port Perry. From both of these gentlemen the addresses of each farmer and the numbers purchased from each have been obtained, and each farm and the cattle remaining thereon have been carefully inspected by Mr. Cowan, V.S., acting under the instructions of the Minister of Agriculture, and he reports a total absence of disease of any kind on these farms.'"

"In this discussion as to what the disease may be, the British experts take it upon themselves to call it contagious pleuro-plenmonia, notwithstanding the total absence of the essential features of this disease in these cases, namely, the absolute freedom from disease in the country from which these animals were shipped, and the absence of *post-mortem* lesions. In true contagious pleuro-pneumonia these are never absent, as shown by the presentation of marked pathological differences, which are freely admitted by the British experts. There is also the fact that not a single case of chronic lung lesions has yet been discovered in Britain in cattle exported from Canada. When the British experts undertook to account for this, as they have done, by crediting the inspectors at the Canadian ports with a degree of proficiency as

experts that enables them to prevent chronic cases from being shipped they give them credit which they are not entitled to and is more than has ever been accredited to veterinary inspectors before. While I, as chief inspector, would be delighted, if I could accept such a compliment on behalf of the inspectors, I know too well that it would be an utter impossibility for any inspector, no matter how careful, to avoid passing chronic cases, if they did exist. The profession in Britain to-day, with few exceptions, accept the statements made by us in Canada and have adopted the name suggested by me, transit pneumonia, as the proper explanation of the disease."

ELECTION OF MEMBERS OF COUNCIL OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

THE result of the election of members to serve as Councilmen was declared at the Annual Meeting on June 6th, to be as follows :—W. Hunting, General Sir F. W. Fitzwygram, R. Trigger, Professor Penberthy, I. A. W. Dollar, A. W. Mason, T. D. Lambert, J. Fraser, W. O. Williams, J. Abson.

PRESENTATION TO PROFESSOR AXE, M.R.C.V.S.

AFTER the annual meeting of the Royal College of Veterinary Surgeons on the 6th May, Professor J. Wortley Axe, late of the Royal Veterinary College at Camden Town, was presented with a handsome testimonial by the members of the veterinary profession, as a tribute of their regard for the services which he has rendered to the cause of veterinary science. The presentation of the testimonial, which consisted of a handsomely-chased silver centrepiece with side pieces, of the style Benvenuto Cellini, and two silver-chased side dishes of the Queen Anne style, together with a diamond and pearl bracelet for Mrs. Axe, took place after the annual general meeting of the members of the Royal College of Veterinary Surgeons, at 10, Red Lion Square, Holborn. In making the presentation, the President of the College (Mr. F. W. Wragg) said the members of the College felt that they could not permit Professor Axe to retire from the positon of teacher at the Royal Veterinary College, which he had held for upwards of twenty-five years, without bearing testimony to the efficiency with which the duties which devolved upon him had been performed during that long period. Professor Axe had in the course of his career taken an active interest in all that pertained to veterinary science, as well as to sanitary science in general, in relation, not only to the lower animals, but also to public health. Professor Axe, who was cordially received, in accepting the testimonial, remarked that he was gratified to receive such valuable testimony of the services which he had been able to render to the profession to which he had devoted his life. He thanked them, not only for their kind recognition of those services, but at the same time for the warm and generous reception which they had given to the flattering remarks of the President. As to the work in connection with the College in Camden Town, that had, from the commencement to the finish, been a labour of love, and he was delighted to find that it had also succeeded in winning their esteem and regard. In conclusion, he assured them that both Mrs. Axe and he should always treasure most highly the souvenirs which they had received from the profession. The presentation was made in the presence of a large gathering of members of the profession and the Council.

Reviews.

SEMIOLOGIE, DIAGNOSTIC ET TRAITEMENT DES MALADIES DES ANIMAUX DOMESTIQUES. (SEMIOLOGY, DIAGNOSIS AND TREATMENT OF THE DISEASES OF THE DOMESTIC ANIMALS.) By C. CADEAC, Clinical Professor at the Alfort Veterinary School, Vol. II. (Paris: J. B. Bailliere. 1894.)

Only a short time has elapsed since we had the pleasure of giving a favourable notice of the second volume in the series of those intended to form an *Encyclopédie Vétérinaire*, published under the direction of Professor Cadeac, and which was the first of the two volumes devoted to the causes, diagnosis and treatment of the maladies of the domestic animals. The second and concluding volume is now before us, and quite justifies the opinion we had formed as to the high merit of the work. The whole of the volume is written by Cadeac, with the exception of a chapter dealing with what is more or less a misnomer, vaccination, from the pen of another teacher in the Lyons School—M. Morly. As in the other volumes, the arrangement is satisfactory, and the treatment of the subjects all that could be desired. The volume commences with Chapter IV., treating of the disorders and diseases of the urinary apparatus, which are of much importance in veterinary practice, as they include so many morbid conditions of a more or less serious nature. Chapter V. deals with the maladies of the generative organs of the male and female; Chapter VI., those of the maurinæ and lactation; Chapter VII., the functional disturbances and diseases of the skin; Chapter VIII., those of the apparatus of innervation; Chapter IX., those of the organs of sense; Chapter X., the maladies of the locomotory apparatus; and Chapter XI., treats of calorification and fever. In the second part the evolution—the course and termination of diseases—is thoroughly, and yet concisely handled; in the third part diagnosis and prognosis are considered; and the fourth part is devoted to the treatment of disease, in which a chapter is alloted to what is termed "vaccination," and another to curative therapeutics. The whole of the subjects are treated in a thoroughly scientific and yet practical manner, wonderful indeed in their development, when we considered the comparatively small amount of space allowed for each, the entire volume comprising only 420 pages, while the price is only twopence more than four shillings. We should mention that there are also woodcuts and charts of temperature and pulse.

DELLE AFFEZIONI CARBONCHIOSE IN RUPPORTO COLLA SETTICEMIA. (ANTHRACOID AFFECTIONS IN RELATION TO SEPTICÆMIA.) By Dr. FREDERIC BOSCHETTI. (Torino: Unione Tipografico-Editrice. 1893-94.)

This elegantly got-up little book is the faculty thesis recently prepared by Dr. Boschetti, the very capable clinical and pathological teacher in the Turin Veterinary School. Selecting anthrax and anthracoid affections for his theme, the accomplished author bestows great pains upon the elucidation of these, and their relations to septicæmia. In doing so, he covers a wide extent of ground, and shows his perfect acquaintanceship with the literature pertaining to the subject by quoting the opinions of nearly all the writers of modern times who have identified themselves with its study. This has enabled him to draw up an interesting and instructive *resume* of the history of such affections, and give us a concise, if brief, analysis of the principal works that have appeared upon them in ancient and recent periods. This occupies nearly the whole of the first portion of the thesis, the remainder being given to the relation of anthrax to septicæmia—dealing with septicæmia in general, enquiring if the virus of anthrax is of a putrid nature, the biological distinction between the bacterium of anthrax and that of septicæmia, the forms of anthrax treated of by Delafond, Davaine, Pasteur and Joubert, Toussaint,

Arloing, Cornevin and Thomas, Brusasco and Boschetti, as well as symptomatic anthrax and malignant œdema. In this review attempts are made to establish a relationship between the Bacterium Chauvœi and the septic vibrion, though the author is far from asserting that this connection is clearly established.

In the second part the prophylaxis of these affections is introduced, their treatment by iodine, the biniodide of mercury, and bicarbonate of soda being surveyed, and the history of protective inoculation sketched in an impartial and convincing manner; while the sanitary police measures necessary to be observed in contending with these disorders, are not overlooked. Boschetti is inclined to regard what he terms the "chemical vaccinations," such as those of Hankin, as likely to prove the most simple and certain for the protection of the animal body against infection. In an appendix he gives an account of some experiments of his own, made in the bacteriological laboratory of the medical clinic, which are evidence of the great value he places on experimental demonstrations; indeed, in the last line of his excellent thesis he quotes the injunction of the great Galileo, *esperimentazione!*

A Manual of Saddles and Collars, Sore Backs and Sore Shoulders. By Veterinary-Captain Fred Smith. (London: Harrison and Weir. 1893.)

A second edition of Veterinary-Captain Smith's manual has been rendered necessary by certain changes in the system of saddlery adopted in the mounted corps of the British Army; and the revision which has been made will doubtless render it still more useful, as an important section dealing with horse-collars and sore shoulders has been added. A careful study of the contents of the little book, and the careful application of its instructions in the utilization of army horses during peace or in war, should greatly diminish the risk of those potent causes of inefficiency, sore backs and sore shoulders, and thus spare the army veterinary surgeon much trouble and anxiety.

Army Veterinary Department.

Gazette, June 12th.

Veterinary-Captain W. Gladstone to be Veterinary-Major.

Veterinary-Lieutenant H. M. Maxwell, F.R.C.V.S., to be Veterinary-Captain.

Veterinary-Colonel Lambert, C.B., Director-General of the Army Veterinary Department, was a guest at the dinner given by the Secretary of State for War in honour of her Majesty's birthday on June 26th.

Veterinary-Major Philips has reported his arrival from India on leave of absence.

Veterinary-Lieutenant A. H. Lane has been selected for employment in the Egyptian army; consequently, he will be placed on the seconded list of the Department from the date of embarkation.

The annual dinner of the Department was held at the Holborn Restaurant on June 22nd. The following officers were present:—Veterinary-Colonel J. D. Lambert, C.B., Director-General; Veterinary Lieutenant-Colonels: J. A. Oliphant, W. B. Walters, C.B., W. A. Russell, C. Phillips; Veterinary-Majors: J. Kettle, J. Reilly, J. Hammond, B. L. Glover, G. Durrant, J. A. Woods, R. Rowe, J. W. Evans, J. Burton, S. Longhurst; Veterinary-Captains: T. Flintoff, F. Smith, D. C. Pallin, R. Pringle, T. A. Killick, J. B. Savage, F. Raymond, J. T. Dibben, J. Finlayson, F. Joslen; Veterinary-Lieutenants: T. Marriott, E. R. C. Butler, G. C. O. Fowler, J. R. Meredith, and F. S. H. Baldry.

Parliamentary Intelligence.

HOUSE OF COMMONS, May 28th.

TUBERCULOSIS COMMISSION.

In answer to Mr. CHAPLIN,

Mr. SHAW-LEFEVRE said: The Royal Commission on Tuberculosis was appointed on July 21st, 1890. I am informed by the Commissioners that they have completed the taking of evidence, but have been engaged upon a long and elaborate experimental inquiry. Owing to the illness of one of the inquirers, there has been a delay in the completion of one of the scientific reports, but this is now being revised in passing through the Press. Immediately it is printed the Commissioners will meet and their report may be shortly expected.

June 1st.

SUSPECTED PLEURO-PNEUMONIA.

Mr. CHAPLIN asked the President of the Board of Agriculture whether he was able to say what decision the veterinary experts of the Board of Agriculture had come to with regard to the suspected case of pleuro-pneumonia in a Canadian animal, of which he spoke on Tuesday last.

Mr. GARDNER: The veterinary officers of my Department report to me that the appearances presented by the diseased portion of the lung of the animal landed from the Toronto on the 20th ult. are those which are always present in cases of contagious pleuro-pneumonia, and that in their experience they have never met with similar appearances in the case of any other disease. I have also received a report to the like effect with respect to the lungs of an animal landed from the "Laurentian" on the 23rd ult. The course to be taken in regard to these reports is now engaging my careful consideration.

HOUSE OF LORDS, June 5th.

POLICE (SLAUGHTER OF INJURED AMIMALS) BILL.

The EARL OF CAMPERDOWN moved the second reading of this Bill, which proposed to give powers to police constables, under certain conditions, on receiving information that an animal was seriously injured and upon a certificate that the animal was not likely to be of use again, to give orders for it to be slaughtered.

The EARL OF CHESTERFIELD said that on the part of the Home Office he accepted the Bill. He had, however, to state that certain amendments which it was intended should have been moved in Committee in another place had, owing to a misunderstanding, not been moved, and therefore he should have to move them at the proper time in that House.

The Bill was read a second time.

HOUSE OF COMMONS, June 5th.

CANADIAN CATTLE.

Mr. ARNOLD-FORSTER asked the President of the Board of Agriculture whether his attention had been called to a statement in *The Times* newspaper, alleging that Canadian cattle owners were disposed to doubt the disinterestedness of the English experts appointed to examine Canadian cattle, and that they would therefore bitterly resent any decision made by those authorities adverse to their own interest; whether there was any foundation whatever for this attack upon the *bona fides* of the Imperial officers; and whether Dr. M'Eachran, F.R.C.V.S., Inspector of Stock, and Chief Veterinary Inspector of the Quebec Department of Agriculture, was the principal officer charged with certifying the existence of pleuro-pneumonia in cattle about to be

exported from Canada to the United Kingdom; and, if so, whether Dr. M'Eachran was still managing director of the Walrond Ranch, Alberta, or had any interest in that or any other company engaged in exporting cattle from Canada to the United Kingdom.

Mr. GARDNER: With regard to the concluding question of the hon. member I would say that I possess no official information on the matters referred to, but I am informed by the Colonial Office that it has been ascertained, through the Governor-General of Canada, that Professor M'Eachran is connected with the Walrond Ranch, but in what capacity is not stated. In reply to the first two questions, I would say that I have seen the newspaper statement to which the hon. member refers, but I do not gather that it is anything more than the repetition of vague and irresponsible gossip. I may, perhaps, be allowed to state that I have had the honour of presiding over, and working with, the officers in question for nearly two years, and no one knows better than I do their great ability and absolute straightforwardness in the discharge of their public duties.

Mr. MACARTNEY asked whether the right hon. gentleman would ascertain whether there was or was not any foundation for the report referred to. ("Oh, Oh.")

Mr. GARDNER: I have already informed the House that I have no official information on the subject.

ANTHRAX.

Mr. FELLOWES asked the President of the Board of Agriculture whether he had received the reports he called for as to the measures adopted in foreign countries to prevent the spread of anthrax; and whether he was now in a position to say if he would appoint a departmental committee to inquire whether anything could be done to stop the serious consequences of the disease, not only to live stock, but in some cases to human beings also.

Mr. GARDNER: The particulars with which I asked to be furnished regarding the measures adopted in certain foreign countries for preventing the spread of anthrax have been obtained, and are now under consideration. My present impression is that no advantage would be gained by the appointment of any special committee on the subject, but I should like to consider the matter further before giving a definite answer to the second part of the hon. member's question.

PLEURO-PNEUMONIA IN KENT.

In answer to Mr. KNATCHBULL-HUGESSEN,

Mr. GARDNER said he had no information of a further outbreak of pleuro-pneumonia at Sevington, near Ashbourne, in the county of Kent. He fancied that the report had been circulated in consequence of the slaughter there of some animals that had been in contact with those in which the disease was discovered some time ago.

June 11th.

SWINE FEVER.

In answer to Mr. CHAPLIN,

Mr. H. GARDNER said: During the 31 weeks which have elapsed since November 1 last, when the Act of last Session came into force, 2,782 outbreaks of swine fever have been reported to us, and 4,562 swine have died of the disease. The present arrangements for dealing with the disease differ so essentially from those which were previously in existence that any true comparison of these figures with those of the corresponding period of last year is impossible. The actual number of outbreaks reported to the local authorities during the period from November 5, 1892, to June 3, 1893, was 1,710, and the number of swine dying from the disease 3,772. The mode of working the Act was formulated in orders, with copies of which I shall be happy

to supply the right hon. gentleman, and I may add that I have invited representatives of certain local authorities to a conference which I have arranged to hold during the present month with a view to ascertain whether the efficiency of the existing arrangements can in any respect be increased, both as regards the action of the local authorities and of our own officers.

June 12th.

THE IMPORTATION OF CANADIAN CATTLE.

Mr. CHAPLIN asked the President of the Board of Agriculture whether any further cases of disease had been discovered by the special examination of Canadian cattle; and whether he had come to any decision with regard to the exemption of Canadian cattle from slaughter at the port during the present season.

Colonel WARING asked a similar question.

Mr. GARDNER: An animal was landed at Liverpool on the 2nd inst., ex steamship "Lake Superior," from Montreal, and on examination a small portion of the right lung presented appearances similar to those found in contagious pleuro-pneumonia. With a view, if possible, to clearing up any doubts which have been expressed as to the precise character of the disease with which the infected animals landed from Canada during the past two years have been affected, I am proposing to hold a special inquiry with a view to my hearing the views of the various experts who by my invitation inspected the diseased portion of the lungs of the Toronto animal, and I am happy to say that I have been able to secure the assistance in this matter of my right hon. friend the member for Bury, and of Dr. Burdon Sanderson, the Waynflete Professor of Physiology at Oxford University, who have most kindly undertaken to act as my legal and pathological assessors. Pending the conclusions at which I may arrive as the result of my inquiry, the existing requirement of slaughter at the port must, of course, be maintained, but it would be contrary to law for me to enter into any engagement either one way or the other as to my future action, which must depend on the facts and information before me from time to time.

Mr. CHAPLIN: Are we to understand that the right hon. gentleman has doubts as to the decision of the experts of the Board of Agriculture, and that he has ceased to place reliance on their opinions as to what is or what is not contagious pleuro-pneumonia?

Mr. GARDNER: No, Sir. The right hon. gentleman is to understand nothing of the sort. Certain scientific questions have arisen with regard to these lungs which it would be to the advantage of everybody to have decided, and I may tell the right hon. gentleman that nobody is more anxious that this inquiry should take place than my own staff.

Mr. CHAPLIN: May I ask where these doubts have arisen unless it be in the minds of those whose interest it is to send these animals to England? Is there any doubt in the minds of experts at the Board of Agriculture?

Mr. GARDNER: I have told the right hon. gentleman that nobody is more anxious to have this inquiry than my own advisers.

Later,

Mr. CHAPLIN asked if the President of the Board of Agriculture could inform the House what were the special qualifications of the member for Bury to pronounce an opinion as to whether the lungs of a certain animal were affected with disease; and what was the reason for employing an eminent legal authority in a matter where the question to be decided was whether the lungs of certain Canadian animals recently landed in this country were or were not affected with contagious pleuro-pneumonia.

Mr. GARDNER said he was not concerned to answer as to the qualifications of the right hon. member for Bury, which were well known in this House and

elsewhere. But the inquiry which he proposed was entirely for his own information as President of the Board of Agriculture. The Government did not abrogate its responsibility nor its authority, but for his own information he proposed to examine experts in order to see whether the animals in question were affected as alleged or not.

Mr. CHAPLIN: How does the President of the Board of Agriculture expect that the employment of an eminent legal authority is to throw any light whatever on a purely technical question?

Mr. GARDNER: I should have thought the right hon. gentleman would know that the examination of experts is a very common practice in the courts of law.

June 14th.

THE IMPORTATION OF CANADIAN CATTLE.

In reply to Mr. Chaplin and Colonel Waring, Mr. GARDNER said: With a view, if possible, to clear up the doubts which had been expressed as to the precise character of the disease with which the infected animals landed from Canada during the past two years had been affected, he was proposing to hold a special inquiry with a view to hearing the views of the various experts who, by his invitation, inspected the diseased portion of the lungs of the Toronto animal, and he was happy to say that he had been able to secure the assistance in this matter of Sir H. James and of Dr. Burdon Sanderson, the Waynflete Professor of Physiology at Oxford University, who had most kindly undertaken to act as his legal and pathological assessors respectively. Pending the conclusions at which he might arrive as the result of the inquiry, the existing regulations of slaughter at the port must, of course, be maintained; but it would be contrary to law for him to enter into any engagement either one way or the other as to his future action, which must depend on the facts and information before him from time to time.

June 18th.

GLANDERS IN LONDON.

Mr. FELLOWES asked the President of the Board of Agriculture whether he was aware that glanders was very prevalent in London, and whether his scientific advisers had reported that the disease was spread through the drinking troughs for horses in the metropolis; and, if so, whether some steps could be taken to prevent the spread of the disease, not only in London, but also into the country districts.

Mr. GARDNER: The figures before me do not support the view that glanders is very prevalent in London at the present time. During the 23 weeks ending the 9th inst. we received reports of only 346 outbreaks and 461 animals attacked in the county of London, as compared with 490 outbreaks and 820 animals in the corresponding period of 1893, and 553 outbreaks and 1,029 animals in the corresponding period of 1892. There is no doubt that glanders is at times spread by the use of drinking troughs by horses affected with the disease, but in view of the figures I have cited, I do not think that the closing of such troughs and the consequent withdrawal of the facilities they afford for watering horses would be justified at the present time. I will, however, keep the matter in view.

COMPENSATION IN CASE OF ANTHRAX.

Mr. FELLOWES asked the President of the Board of Agriculture whether he could see his way to introduce into the Contagious Diseases (Animals) Bill a clause giving power to the Board of Agriculture to grant to local authorities permission to pay for carcass value of any animal which had died of anthrax.

Mr. GARDNER: The Bill to which the hon. gentleman refers is a Consoli-

dation Bill, and the introduction of such a clause as that proposed would, therefore, not be appropriate. In any case, however, I could not undertake to introduce legislation for the purpose suggested, for the reasons which I explained to the hon. gentleman subsequently to the question he addressed to me on this subject on December 4th last.

Mr. FELLOWES asked whether the right hon. gentleman was aware that the local authorities had great difficulty in ascertaining information as to outbreaks of anthrax in consequence of the allowance for slaughter and burial being insufficient to encourage owners to give notice.

Mr. GARDNER: I am not aware of that, but I may point out that there is already an inducement to owners to report cases because the local authorities at the present time disinfect the premises at their own expense.

June 22nd.

CANADIAN CATTLE.

In reply to Mr. JEFFREYS,

Mr. BUXTON said: The Canadian Government has reported that Mr. M'Eachran, the Chief Veterinary Adviser of the Dominion Government, is managing director of the Walrond Ranch, Alberta, Canada; but they add that ranch cattle have been increased in value by the order requiring the slaughter of Canadian cattle at the port of debarcation, and that the proprietors of the Walrond Ranch sell their cattle on the ground, and are not exporters.

Proceedings of the Royal College of Veterinary Surgeons and Veterinary Medical Societies, etc.

THE JUBILEE AND ANNUAL DINNER OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

THE celebration of the Jubilee of the Royal College of Veterinary Surgeons, was merged this year in the usual annual dinner that takes place on the evening of the meeting in Red Lion Square. This happened on June 6th, the day fixed by the last charter, and, unfortunately, that also on which the Derby is run. Owing to this conjuncture, the occasion was shorn of much of its prestige by the absence of many gentlemen who had been invited, but whose sporting proclivities, we may assume, detained them on Epsom Downs. Nevertheless, there was a fair muster of guests, and the assemblage altogether reminded one of those gatherings which have occurred at the Annual Dinner on two or three occasions within the last twenty years, and which have become memorable because of their rarity. Very few of the senior members of the profession attended, and the majority of the teachers and examiners were conspicuous by their absence. The popularity of the President, however, as well, perhaps, as the exceptional occasion, brought a good number of members to the Café Royale, and a pleasant evening was spent without any note of discord being struck to interrupt the harmony. The most conspicuous and perhaps most honoured and welcome guest of the evening, was our eminent *confrère*, Professor Nocard, whose geniality and agreeable presence were heartily acceptable on this, as on a former visit to London. The guests present were Lord Egerton of Tatton; Sir G. Russell, M.P.; T. H. Bolton, M.P.; Dr. Thorne Thorne, of the Local Government Board; Dr. Collins, London County Council; Dr. Goffin; H. Somerville, Esq.; F. R. Green, Esq.; W. Morton-Smith, Esq.; R. Powys, Esq.; G. Thatcher, Esq.; W. Hulke, Esq., President of the Royal College of Surgeons; Dr. Ford, President of the Medical Conjoint Board, Dr. Bland Sutton; Professor Nocard; Professor Crookshank; E. Clark, Esq., Secretary of the Royal Agricultural Society; Victor Horsley, F.R.S.; Professor Sims Woodhead; W. C. Jackson, Esq. and F. Bayard, Esq., of the Worshipful

Company of Farriers; Dr. Sherrington; Dr. Wise. The members of the profession were :—Sir F. Fitzwygram, Bart.; Professor Simmonds; Sir Henry Simpson; Dr. Fleming, C.B.; Veterinary-Colonel Lambert, C.B.; Veterinary-Lt.-Colonel W. B. Walters, C.B.; Veterinary-Major Glover; Veterinary-Captain Smith; Veterinary-Captain Raymond; Professors Walley, McFadyean, Duguid, Bayne, Penberthy, Shave, Macqueen, Axe, Pritchard; Dr. Peacock; J. F. Simpson, J.P.; W. J. Mulvey; A. C. Cope; J. E. Peele; J. Abson; H. Olver; W. Shipley; W. H. Bloye; J. Malcolm; J. D. Barford; W. F. Garside; A. Prudames; K. Wilson; H. K. Shaw; F. Barling; T. G. Batt; J. Reynolds; H. Kidd; E. E. Batt; F. Jarvis; E. Beddard; A. H. Darwell; R. Hughes; J. S. Fraser; E. Faulkner; J. S. Hurndall; J. Bell; W. Woods; J. B. Wolstenholme; A. Over; R. C. Trigger; E. H. Elder; W. Awde; E. M. Bovett; F. L. Somerset; F. Dun; T. A., W. W., J. A. W., and H. W. Dollar; H. J. Goodall; S. Villar; E. Hoare; A. J. and S. Broad; J. and E. Woodger; B. Freer; A. W. Mason; B. Long; W. Bower; C. and W. Hunting; G. Gardner; G. J. Barton; R. T. Wragg. No fewer than eleven representatives of the press were also present. The arrangements were excellent, and the only drawback to the enjoyment of the evening was the stuffiness of the room, due to its low ceiling.

After the usual loyal toasts proposed by the President, Sir Henry Simpson gave that of the Army, Navy and Reserve Forces, in which he alluded to General Fitzwygram as a member of the profession and a munificent donor of prizes; also to Veterinary Lt.-Colonel Walters having been awarded the C.B. for his services.

General FITZWYGRAM replied, and in the course of his remarks said it was no doubt true that their soldiers were too young, but they could not obtain them older. It was not possible to have reserves and long service at the same time, and he thought that the reserve numbering 80,000 men was a matter for consideration. The reason why the navy was more popular than the army was, he thought, because the soldier spent his surplus pay daily, but the sailor was away from home for some months and returned with his pockets full of money, and was therefore more acceptable to the civil population. The army and navy were only for defence, not attack—the defence, our homes and our lives; our empire was wide as the sun, we desired none of the other powers' territory, and what we had we were determined to keep; if our soldiers were young he had no doubt that when called upon to fight they would do so with the same courage their fathers had shown.

Mr. MASON responded for the reserve forces, to the effect that should the necessity occur they would be found ready.

Mr. R. T. WRAGG proposed the Houses of Parliament, and in doing so asserted that Englishmen were proud of such a straightforward and straight-running Prime Minister as Lord Rosebery, and of so rigid an economiser of time as the leader of the House of Commons, who would not allow the House to adjourn for the Derby-day.

Lord EGERTON replied for the House of Lords, and said that no body of the people in this country were more interested in the work of Veterinary Surgeons than that which the upper chamber represented. The House of Lords was much threatened, and something had been said about ending or mending it; but it was sure to exist so long as it performed its duty with due regard to the opinions of the country, and no body was more sensitive in that respect; the Lords were an integral portion of the State; they were useful, and from their ranks furnished many leading men. He congratulated Lord Rosebery on the victory of his horse at the Derby that day, adding that all Englishmen would rejoice at the success of a true sportsman, and that no doubt some of the lustre which had fallen on him would be reflected on the House of Lords.

Sir GEORGE RUSSELL acknowledged the toast of the House of Commons. He said he had no intimate connection with the veterinary profession, but there were in his constituency two of its most prominent members, Sir Henry Simpson and his brother. No profession had made greater strides than the veterinary profession during the last twenty-five years, and the increase of public confidence in it was remarkable. It had been stated that horses were not so considerately treated in sickness as human beings, as the former were inferior to the latter. This might be open to doubt; and he would ask whether the present company would sooner treat the Archbishop of Canterbury or Ladas, the winner of the Derby.

Mr. ERNEST CLARKE proposed what was really the toast of the evening, The Royal College of Veterinary Surgeons. In doing so he commented on the relations between agriculture and veterinary science, as exemplified in the case of the Royal College and the Royal Agricultural Society. He also referred to Professor Simonds as a member of the Society, and as the sole survivor of those who had been instrumental in obtaining the charter of incorporation for the veterinary profession. He likewise made mention of the successful efforts of Dr. Fleming some ten years ago to advance the interests of the profession and place it on a firm basis, by obtaining for it the Act of Parliament. In the future there was still much work to be done, but he was sure the best thanks of the Royal Agricultural Society were due to the provincial practitioners and professors of the colleges for their assistance, and for the information tendered by them to the Society with reference to the diseases of animals.

The PRESIDENT, in responding, made allusion to the condition of the profession previous to 1844, and to its disunion—diplomas being issued by the Royal Veterinary College in England, and for Professor Dick's School by the Highland and Agricultural Society of Scotland. By means of a circular issued by him, he had ascertained the seniority of members, those who were still on the register and who were members previous to 1844 having sent replies to the number of forty. This included Professor Simonds, Mr. Lepper, of Aylesbury, Mr. John Gamgee, who passed in 1824, and is, consequently, the father of the profession; also Mr. Pritchard, of Wolverhampton. In 1844 there were only 1,200 names on the register, but now there were more than 3,000. He feared he had performed his duties as President inefficiently, but he had to acknowledge that he had been greatly assisted by the loyal support he had received from the profession. He asked to be allowed to include the name of Professor Simonds in the toast, he being in a better position to inform them of the early history of the profession and the obtainment of the Charter.

In replying, Professor SIMONDS said they could scarcely expect from a man of his years that he would reply in the same hearty manner in which his health had been proposed. He was now the oldest of the profession except one, John Gamgee. He then gave a detailed sketch of his professional work, stating that he entered the Royal Veterinary College as teacher in 1842 and remained in office for forty years. The Royal Agricultural Society was established in 1838, and shortly after he was elected a member. At that time only the diseases of the horse were studied at the Royal Veterinary College, and the committee offered a hundred pounds per annum for extended study of diseases of sheep and cattle, and Professor Sewell was appointed teacher. This grant was afterwards withdrawn, and a chair of pathology founded by the College. He was elected to fill the position. As consulting veterinary surgeon to the Society it fell to him in investigating diseases to examine the common causes, the etiology of these diseases, and thus the students obtained valuable insight. From 1844 until he left the College almost every student he looked upon as a son; he might say that that was rather a large family to father. He

then gave a brief account of the repeated rejections of the Charter by the Government and their final success.

Dr. GEORGE FLEMING, C.B., proposed the toast of "The Medical Profession." It gave him great satisfaction to propose the toast, though at very brief notice, but he felt that every other member of his profession would have accepted the duty with pleasure. From the very earliest times the closest relationship between human and animal medicine had existed, and the connection had been more fully recognised in modern days. Our profession had had the support of many eminent surgeons and pathologists in this country, from the time of the immortal John Hunter, who was largely instrumental in establishing it, and Sir Astley Cooper, who gave it his continuance and support, up to the present day. Since he had the honour of being an examiner, now getting on to a quarter of a century, he had been associated in that function with many eminent members of the medical profession, among whom he might mention Professors Sharpey, Taylor, Burdon-Sanderson, Bently, Sir W. Flower, Sir W. Turner, Professors McKendrick, and others; and the presence of representative men of high position there that evening, and to whom he particularly alluded, all this was abundant evidence of the great interest the medical profession took in veterinary medicine. And if human medicine had benefited animal medicine by imparting its knowledge and the results of its investigations to veterinary surgeons, these were now labouring to repay the debt; as we now had zealous and energetic workers in our ranks, who were labouring hard and with wonderful success to elucidate the problems of comparative pathology. Among these none was perhaps more distinguished than our colleague, Professor Nocard, who had travelled from Paris to grace and to add dignity to our gathering. The union between human and veterinary medicine was most intimate, and all his efforts during his (the speaker's) career had been to make the bond still closer. He hoped that the next fifty years would see his wish realised. With regard to Sir G. Russell's conundrum, he should say there could be only one reply, man was the higher animal, human medicine came first, veterinary medicine second, but they should work together.

Mr. J. W. HULKE, President of the Royal College of Surgeons, said, in reply, that comparative anatomy was the cornerstone of science. They could not rightly study human anatomy without a knowledge of that of other animals; their physiology was the same, there was but one pathology, one materia medica, and one therapeutics. Science was advancing, and he trusted that the workers in veterinary medicine would find successors to carry it on. May the Royal College of Veterinary Surgeons flourish root and branch for ever.

Dr. ORD, President of the Conjoint Medical Board, whose name had been also included in the toast, said he had been for a long time in sympathy with their examining board, and had had many communications with them respecting the alterations in their examinations. Referring to the conundrum, as a patient the Archbishop of Canterbury could speak, but the horse could not, and that applied to veterinary surgeon's patients; but he felt that there was one position where they were equally at a loss, a young child is unable to describe its symptoms; he had watched for hours at the bedside of a sick child endeavouring to gather from its movements some indication of the nature of its suffering. Therefore, he had some idea of the difficulties veterinary surgeons had to encounter in dealing with the diseases of animals.

Professor AXE proposed the toast of the visitors, coupled with the name of M. Nocard. They had there that evening gentlemen representing agriculture, science, medicine, and the craft of horse shoeing; he felt, after the remarks of the president of the Royal College of Surgeons, how strongly they were drawn towards the science of human medicine. They were delighted that

evening to welcome amongst them their distinguished *confrère*, Professor Nocard.

Responding in French, Professor Nocard expressed the great pleasure it gave him to be present on that occasion, and apologised for addressing them in his own language. He was deeply impressed with the welcome he had received, and though he had been elected one of themselves some years ago, yet his reception that night showed him that they were all as one family. He referred to veterinary medicine having been longer established in France than in England, and of the disadvantages under which it had laboured; but these were now surmounted. He pointed to the suppression of certain contagious diseases of animals in this country as evidence of the capabilities of veterinary medicine to deal with these. He regretted extremely that Professor Chauveau was detained in France by his official duties, but he sent his best good wishes along with his regrets. In the names of Professor Chauveau and French veterinarians, whom he represented there, he offered his best wishes for the prosperity of the Royal College of Veterinary Surgeons.

Dr. COLLINS proposed the toast of the Schools. He believed that he owed his invitation that evening to the fact that he was in frequent communications with members of the profession in carrying out the Contagious Diseases Acts under the London County Council. Referring to the conundrum that had been given, he was inclined to go to the question of progeny; doubtless the offspring of Ladas would be worth many thousands of pounds, but by what freak of atavism the progeny of the Archbishop of Canterbury came to produce a "Dodo," he was unable to say, and he would leave that question to his friend Dr. Bland Sutton. Veterinary surgeons had complained of want of cohesion previous to 1844, but he would remind them that even in 1816 men who sold glue and Epsom salts could be placed on the medical register. He remarked on the growing connection between the two professions, and trusted that their value would be reciprocal.

Professor WALLEY, in a brief manner, replied on behalf of the Schools.

Mr. OLVER, in proposing the National Veterinary Association, glanced at its origin and intentions.

Mr. HUNTING, the President of the Association for the year, acknowledged the toast.

This concluded the celebration of the Jubilee of the Royal College of Veterinary Surgeons.

ROYAL COLLEGE OF VETERINARY SURGEONS.

The Examinations in London.

THE Written Examination in the various classes was held on Friday, May 11th, in London, at the Examination Hall of the Royal College of Physicians and Surgeons, Victoria Embankment. The Oral Examinations at a meeting of the Court of Examiners, 10, Red Lion Square, on and between May 21st and 23rd, and the Practical portion of the Final Examination at the Royal Veterinary College, Camden Town, on and between May 28th and 30th.

The following students passed their examinations:—

Final Examination.

Mr. F. Gale.
" T. J. Arman, 45, Falmouth Road, S.E.
" F. H. Pogson, Belvoir, Grantham.
" E. G. Robertson.
" T. W. Lloyd, Aldershot.
" J. W. O'Rourke.
" E. T. Pearce, Swansea.

Final Examination—continued.

Mr. H. C. Welch, Bath.
„ A. L. Wilson, Highbury.
„ H. T. Downe, Norwich.
„ T. H. J. Ward, Henham, near Bishop Stortford.
„ F. W. Carless, Hoveringham, near Nottingham.
„ W. Fyrth, Birmingham.
„ R. J. G. Voison, St. Lawrence, Jersey.
„ W. Lindley, Kilburn.
„ C. M. Lawton, Brixton Hill.
„ R. H. H. Over, Rugby.
„ F. S. Stanley, Borough, S.E.
„ Percy Brownrigg, Shelly, near Huddersfield.
„ H. E. Browne, Outacamund, India.
„ T. M. C. Hunt.
„ H. C. Reeks, Spalding.
„ H. Peele.
„ W. L. Harrison.
„ J. Tagg, Bengal, India.
„ P. W. Hill, St. Leonards-on-Sea.
„ W. Pauer.
„ H. V. Lowe, Norwich.
„ W. H. Prime, Upper Norwood.

Second Examination.

Mr. H. H. Nicholls
„ W. R. Jones
„ H. Edie
„ A. H. Berry
„ J. A. H. Engel
„ S. Young
„ O. G. Hills
„ A. E. Payne
„ W. N. Thompson
„ E. T. Wood
„ P. S. Howard
„ H. P. Standley
† „ W. J. Browning
„ W. R. Clarke
* „ J. H. Wynne
„ E. W. Parks

Mr. E. B. Bartlett
† „ G. Elmes
„ P. J. Hagmaier
* „ A. J. Moffett
* „ H. Idenden
„ R. G. Gillard
* „ J. B. Southey
„ H. Bibbey
„ J. Dunstan
„ W. A. Bull
„ W. Burt
„ C. H. Spurgeon
„ J. P. Heyes
† „ J. Balden
„ G. H. Butcher
„ C. E. Parker

First Examination.

Mr. C. D. Stewart
„ J. F. Jewell
„ S. Dixson
„ S. de M. Woodward
„ F. A. Verney
„ W. M. Power
„ J. Buckingham
* „ A. F. Harber
„ F. T. Walder
„ F. H. Tranter
„ W. H. Brown

Mr. F. C. Gillard
„ P. M. Evershed
„ A. J. Hines
„ H. Rich
„ G. H. Kitchen
„ L. W. Heelis
„ A. Miller
„ C. E. Perry
„ F. T. Trewin
„ W. G. Green
„ R. S. Collihole

Marked thus * passed with great credit.
Marked thus † passed with very great credit.

First Examination—continued.

Mr. A. N. Swanston
„ S. B. Wollatt
„ B. E. Wooster
„ H. O'Neill
„ R. W. Hall
„ R. B. Wood
„ W. G. Taylor

Mr. F. Crowhurst
„ S. T. Amos
* „ P. Lloyd
† „ D. J. Quinlan
„ J. T. Thurston.
„ C. W. B. Sikes
„ A. Olver

ARTHUR W. HILL.

The Examinations in Scotland.

At meetings of the Board of Examiners held in Edinburgh and Glasgow, on and between May 11th, for Written Examination, and May 15th and 25th, for Oral and Practical Examinations, the following gentlemen passed their Third Examination, and with the exception of three, who are not yet of age, were admitted members of the Royal College of Veterinary Surgeons.

GLASGOW COLLEGE—

Mr. A. Crabb, Glasgow.
„ R. Crawford, Greenock.
„ T. C. Ferguson, Glenluce, Wigton.
„ A. C. Howatt, Pollokshaw.
„ J. Kyle, Londonderry.
„ R. Margrave, Swansea.
„ J. M. Mark, Newry.
„ H. J. Maxfield, Congleton.
„ W. J. Maxwell, Dundalk.
„ J. E. Potter, Paisley.
„ M. White, Glasgow.

DICK COLLEGE—

Mr. R. T. Ashby, Rugby.
„ R. Beilby, Newcastle-on-Tyne.
„ W. Blanchard, Linlithgow.
„ De Courcy Clinchy, Longford.
„ W. O. Dawson, Cork.
„ M. Dugdill, Leeds.
„ G. Furniss, Derby.
„ G. Green, Skipton.
„ E. R. Gibson, Durham.
„ A. Holburn, Yorks.
„ J. Harry, Llanelly.
„ J. W. Lazenby, Yorks.
„ F. C. Mason, Bridlington.
„ P. J. Maher, Clowstown Meath.
„ A. McFarlane, Perth.
„ J. McDonald, Banff.
„ R. McGregor, Edinburgh.
„ A. Pantor, Blair Athol.
„ W. Robertson, Harthill, Lanark.
„ W. E. Russell, Grantham.
„ R. W. Russell, Ayr.
„ T. Scotson, Liverpool.

Marked thus * passed with great credit.
Marked thus † passed with very great credit.

DICK COLLEGE—*continued.*

Mr. W. Scott, Dalkeith.
„ J. H. Threlkeld, Carlisle.
„ R. S. White, Leeds.
„ A. Wilson, Newcastle-on-Tyne.
„ W. H. Blackburn, Monmouth.
„ W. Brown, Sheffield.
„ W. Grey, Leith.
„ W. S. Mills, Newry.
„ H. Thompson, Sheffield.
„ J. Jones, Conway.

NEW COLLEGE.

Mr. W. A. Allott, Sheffield.
„ F. Argyle, Leicester.
„ H. Elliott, Edinburgh.
„ W. Hughes, Longford.
„ R. E. Johnstone, Campbeltown.
„ T. R. Mulcahy, Tipperary.
„ R. Peech, Rotherham.
„ G. R. Simpson, Beverley.
„ T. J. Wilson, Kirkcaldy.
„ W. Malone, Wexford.
„ W. D. Simpson, Manchester.
„ J. S. Smith, Haddington.
„ M. F. Lynch, Waterford.

The following gentlemen passed their second examination :—

GLASGOW COLLEGE—

Mr. R. Armstrong
„ W. Cockburn
„ J. Dick
„ J. Eadie
„ J. Laird
„ G. Magall
„ D. McGeoch
*Mr. J. McNeil
„ R. Miller
„ J. Rankine
* „ W. Roy
„ R. K. Rutherford
„ J. Stirling
* „ M. E. White

DICK COLLEGE—

Mr. T. Boucherhayes
„ H. H. Carlisle
* „ J. H. Conway
„ J. Clifford
„ D. Cumming
„ F. G. Edwards
* „ W. W. Golding
* „ J. D. E. Holmes
* „ W. Hunter
„ P. J. Harris
* „ W. E. Ison
„ S. Johnstone
„ F. Lindsay
* „ W. M. Millar
* „ G. Moir
„ J. M. Morris
Mr. Moyahan
„ A. M. McClew
„ W. Nicol
* „ J. H. Norris
„ W. H. Pickering
* „ T. K. Ramsay
† „ W. D. Rees
„ D. M. Reid
„ F. Richardson
„ A. R. Routledge
„ T. F. Scott
„ J. M. Sinclair
„ E. Wardrope
„ J. Watson
* „ R. Watson
† „ W. S. Worthington

Marked thus * passed with great credit.
Marked thus † passed with very great credit.

NEW COLLEGE—

Mr. T. J. Allen
„ T. Bowlds
„ J. Buck
* „ T. Dick
* „ T. Dickinson
„ J. E. Hutchison
„ J. E. Hardie
„ H. Lockee
„ J. E. Mills
„ A. J. Macdonald
Mr. R. J. Murnane
„ J. McPhail
„ J. Pollard
„ T. O. Richardson
„ R. C. Robinson
„ R. Rawlins
„ R. S. Rowlands
„ M. E. Williams
* „ A. A. Wilson
„ H. S. Jones

The following gentlemen passed their first examination :—

GLASGOW COLLEGE—

Mr. R. Anderson
„ J. Crawford
„ W. Crawford
„ J. Donaldson
„ D. Jack
„ E. P. Jenkins
„ R. H. Johnstone
„ W. A. Kilpatrick
Mr. J. Marshall
„ J. R. McCall
„ J. F. McEachran
* „ T. Rennie
„ J. Smith
„ J. Smyth
„ D. Walker

DICK COLLEGE—

Mr. M. Allan
„ J. W. Brownless
„ R. Butler
„ W. Cathcart
„ J. Chalmers
„ S. Craig
„ W. J. Foley
„ J. L. Frood
„ F. J. Glover
„ T. F. Hall
„ R. Hadfield
„ J. A. Hewson
„ W. H. Hirst
„ A. Hodder
„ N. Howe
„ J. J. Jackson
Mr. J. B. Kay
„ W. B. Kerr
„ R. H. Lambert
„ T. D. Lambert
„ H. Legshore
* „ H. Lomas
„ W. H. Murgatroyd
„ J. P. J. Murphy
„ T. G. Palgrave
„ F. J. Pringle
„ J. Robertson
„ J. C. Stevens
„ J. F. Talbot
„ W. J. Watt
„ W. Young
„ A. Scott

NEW COLLEGE—

Mr. R. J. Bailey
„ T. Bannatyne
„ R. C. Cochrane
„ J. B. Collger
„ H. H. Ferguson
„ W. L. Jones
„ J. Kelly
Mr. A. J. O'Leary
„ W. M. Ogilvy
„ A. M. Porteous
„ H. M. Webb
„ R. D. Williams
„ W. H. Savage

R. RUTHERFORD, F.R.C.V.S.,
Secretary to Board of Examiners.

Marked thus * passed with great credit.
Marked thus † passed with very great credit.

THE CENTRAL VETERINARY MEDICAL SOCIETY.

An ordinary general meeting of this Society was held on 3rd May, at the Royal College of Veterinary Surgeons. Mr. A. Prudames, the president, occupied the chair, and the other Fellows present were Messrs. Henry B. Arnald, A. L. Butters, Vet.-Lieut. E. R. C. Butler, A.V.D., C. H. Cordy, G. Easte, A. E. Gostling, C. J. Humphrey, W. Hunting, G. C. Lowe, Prof. Macqueen, P. McOnie, F. C. Mahon (hon. sec.), G. E. O. Reddish, H. G. Rogers, A. Rogerson, W. Roots, W. Rowe (hon. treas.), F. Samson, H. M. Singleton, F. W. Stanley, W. Stapley, W. H. Williamson, S. Villar; and as visitors Messrs. Morgan Evans, C. J. Reakes, M.R.C.V.S., J. H. Manton, M.R.C.V.S., A. V. Field, M.R.C.V.S., E. Stanley, and Lillywhite.

New Fellows.

A ballot resulted in the unanimous election of the following gentlemen as Fellows of the Society: Messrs. C. R. Edmonds, M.R.C.V.S., 50A York Terrace, Regent's Park, N.W.; J. H. Manton, M.R.C.V.S., 27 Farm Street, Berkeley Square, W.; C. J. Reakes, M.R.C.V.S., Orpington, Kent; and W. Robertson, M.R.C.V.S., Edinburgh.

Nominations.

Mr. W. Carr, M.R.C.V.S., of the Royal Veterinary College, and Mr. P. Vincent, M.R.C.V.S., of Grays, Essex, were nominated.

The Use of Methylated Spirit for Veterinary Purposes.

The Chairman said the desirability of obtaining a permit for the use of methylated spirit for all veterinary purposes is probably not regarded with so much interest by those fortunate brethren who practise in large towns, as by the less favoured ones who labour in the country, or surely the subject would have been taken up with more enthusiasm and persistency than has been the case. I was pleased some time since to read a communication in *The Veterinary Record* of July 29th, 1893, from Mr. Singleton, stating that a permit would on application, be granted by the authorities for the use of methylated spirit for a certain few purposes, and I hoped that its use would be permitted generally, but I found its application was very limited. I applied to the authorities to be permitted to use methylated spirit for general veterinary purposes. This was granted, but for some reason I need not here explain, I was afterwards requested to state the formulæ in which I proposed to use it, and I replied those contained in Tuson's Veterinary Pharmacopœia. I was then informed that as that work contained some formulæ that might be used internally they must withdraw the permit, but I was told that the spirit was allowed in co. camphor and soap liniment, belladonna liniment, and aconite, and I might send further special formulæ. This was done, but only tinct. aloes co. and soap lint. co. were granted. As methylated spirit is very useful in many medicines required for both cattle and horses, I hoped that by adding acid carbolic solution to each formulæ and thereby rendering them impalatable for human consumption that this might pass, but it was not so. Now as I am under the impression that the spirit of the Act of Parliament is not in favour of this prohibition, although the letter of it may be, I still hope that if representations on the subject continue to be made, the desired end may be obtained. The object might be furthered if every veterinary medical society, either by resolutions or petitions, supported the steps already taken by the Council of the Royal College of Veterinary Surgeons, steps which every practitioner must approve although we have not yet heard what the result of this action was. Unfortunately there are so many other subjects of more or less importance standing well to the front, that this one is likely to be overlooked. I will conclude these few remarks by asking you to discuss this matter, so that we may arrive at the best and most likely method of attaining our wishes. I shall be

afterwards prepared to move a resolution on the subject if it be thought desirable.

Meanwhile I think our Secretary has a letter to read on this question which he has received from Sir Henry Simpson, F.R.C.V.S.

The SECRETARY then read the subjoined communications.

GORDON HOUSE, WINDSOR,
April 28th, 1894.

DEAR SIR,—It occurs to me that the enclosed letter from the Inland Revenue office may be of some assistance to the members of the Central Veterinary Medical Society, in their discussion on the desirability of obtaining a permit for the use of methylated spirit for veterinary preparations; and, if so, you at liberty to make any use of it that may be considered desirable, and it may be quoted if desired in any communications to the Board of Inland Revenue.

It is very evident that there is no desire that veterinary medicines should be regarded as a source of revenue, if only veterinary surgeons will take care that no injustice is done to the revenue by the improper use of methylated spirits.

In my enquiry I mentioned the use of methylated spirit for horses and cattle. The reply speaks only of cattle, but this must be an oversight.—Yours very faithfully,

HENRY SIMPSON.

INLAND REVENUE,
SOMERSET HOUSE, LONDON, W.C.
1st March, 1894.

SIR,—In reply to your letter dated the 16th ultimo, I am directed by the Board of Inland Revenue to acquaint you that they do not sanction the use of methylated spirit for cattle, either alone, or in any preparation capable of internal use by human beings, such as those named in the letter which you addressed on the 20th ultimo to the supervisor, viz., tincture of opium, spirit of nitric ether, and aromatic spirit of ammonia.

As regards the inquiries contained in your letter of the 10th ultimo, I am to state that although animals are not named in the Acts relating to the use of methylated spirit, numerous convictions have been obtained for the use of methylated spirit, in medicines capable of internal use by human beings, although there was no reason to doubt the allegations of the defendants that such medicines were intended for use by animals.

While, however, the Board could not allow the unrestricted use of methylated spirit in the preparation of medicines by veterinary surgeons, they would consider favourably any application from such persons for the use of methylated spirit in cattle medicines, provided the formulæ satisfied the Board that the medicine is not capable of internal use by human beings.—I am, sir, your obedient servant,

J. STEELE,
Assistant Secretary.

SIR HENRY SIMPSON.

The CHAIRMAN was of opinion, after hearing these letters read, that they might obtain the permit they desired and that the question was only one of how best to approach the authorities for this purpose.

Mr. H. SINGLETON said that last year he applied for and obtained a license to purchase methylated spirit free from mineral naphtha. The condition on which he secured the license was that the spirit was not to be used for veterinary purposes. The object for which he required the spirit was the ordinary work of a laboratory—pathological work. He had no intention of using the methylated spirit for veterinary purposes. If he had he did not think he should have got the license to purchase six gallons annually. He had already

obtained five gallons. He was subject to a periodical visit from the local excise officer, the officer of the Board of Inland Revenue. He visited him (Mr. Singleton) occasionally and asked to be shown his license, and to see how much of the spirit he had used. He obtained the license for the purpose for which he applied for it, and so he was perfectly satisfied so far as he was concerned.

The CHAIRMAN: I may say that I have a permit for twenty-five gallons of methylated spirit a year free from naphtha, for the purposes I have enumerated. Already, I think, I have had ten gallons of it. No duty to pay. Will any gentleman give us his views on the subject or tell us how we may best attain the end in view? Is there any gentleman present who can tell us the result of the Council's application?

Mr. HUNTING said: Mr. President, the Council applied through their solicitor to the Board of Inland Revenue and were told that the Board could make no exemption in favour of veterinary surgeons. All they could do was to permit the use of methylated spirit to special individuals on their approving the special prescriptions submitted to them in which the spirit was intended to be used. I myself got a permit to have five gallons a year to make a liquid soap for dogs—carbolic acid and soap solution and spirit. I tried to get a carbolic drink or something of that sort, and used with the spirit some aloes and also some aconite, but they have blocked both. Although one of them would be unfit for a man to drink and the other would kill a man in an hour, they would not pass them. The use of methylated spirit for drinking purposes or any preparation that can be used as a medicine is prohibited. The present methylated spirit can be got by anybody without trouble, and used at his own risk and liability to a penalty of £100. What we want is to get the old methylated spirit that would mix and prepare a decent tincture. That they will not let us have.

The CHAIRMAN thought that, after what Mr. Hunting had stated, any action on the part of that Society in this matter would prove futile, and in the circumstances, he would not submit a a resolution, but simply let the matter drop if it was the members' wish. They might have noticed some time ago that there was a disposition to fight the matter, but he personally felt that there was nothing to fight as, according to the strict letter of the law, veterinarians had no case. They might have noticed in the *Veterinary Record* that there was a challenge thrown out, and a desire was expressed to raise a fund in order to have the question settled. The question was apparently settled without fighting, and so the subject had perhaps better be allowed to drop.

Mr. HUNTING then gave an address on—

"THE LESS NOTICED EVILS OF SHOEING."

He said that he thought it was Mr. Bracy Clarke who wrote a book on shoeing, chiefly because he had noticed that the premature wearing out of horses through lameness, and he traced this to the mode in which horses were shod. He also had formed a theory that the premature wearing out of a horse's limbs was more due to bad shoeing than to any other cause, was due to the method of shoeing than to work. One reason for his forming this theory was that some time ago, in looking over a large heap of coffin bones at a place in Bermondsey, he found to his astonishment a tremendous proportion of morbid alteration in the shape of the bone. To his mind it was remarkable how often the coffin bone was altered by causes which, he thought, could only be connected with shoeing. No doubt these injuries were more common a few years ago than now, because up to sixteen or seventeen years ago no horse was supposed to be properly shod until the farrier had removed as much horn as he could without producing hæmorrhage. He cut down the sole, and lowered the feet until he had pared the horn so thin or so wide that

it no longer resisted pressure. It was that matter of pressure which, according to its degree, caused first some pain and tenderness, and then, if this were continued, absorption of the pedal bones. He said that the large number of coffin bones altered by absorption due to uneven pressure, showed that details in a horse's shoeing had been neglected. He was inclined to think that, as veterinary surgeons, they really did neglect the details of a horse's shoeing. In none of their forges were they sufficiently particular about those details. It was no uncommon thing to see a farrier shoe a horse, even in a veterinary surgeon's forge, and with one or two careless strokes of the knife or rasp spoil a surface which up to that time had been correctly treated. Nobody noticed this kind of thing. It was regarded as though it were nothing out of the way, but in point of fact these acts by which the surface was spoiled amounted to a very great deal. Now the evils to which he was about to refer were not those gross evils in which injury, accompanied by lameness, produced corn, fistula of the foot and so on, but injuries which caused very little appearance at the time, but harmed by being permanent, injuries which were not always seen in the feet, but sometimes in the legs. He wanted to refer to these in order to induce the meeting to show him where he was wrong, or with a view, perhaps, to elicit their corroboration of some theories which he had formed about them.

As a rule, when a horse went to be shod, he had an overgrown foot which required some alteration. The old idea was that one of the severest criticisms on horse-shoeing one could make was to say that the farrier fitted the foot to the shoe and not the shoe to the foot. That was a very one-sided statement. As a matter of fact, it was absolutely necessary to fit the foot to the shoe; and if a farrier did not fit the foot to the shoe, he was not doing his work properly. He must alter the foot before he could put the shoe on, and in that alteration he (Mr. Hunting) believed the greatest art of the farrier was shown. A farrier could do a very great deal of harm by the way in which he prepared a foot; but if a foot was properly prepared for shoeing, he could do very little harm by putting on the ugliest shoe that was ever made. The good farrier, however, was popularly regarded as he who could make the best shoe, not the man who could best prepare the horse's foot. The next important thing was to fit the shoe. Unless the foot was properly prepared to start with, they could not shoe it properly. They knew that the under surface of the horse's foot must always be on a line parallel with the ground, must be a plane surface. Any raising of the heel altered at once the angle in front, and therefore changed the articular surface on which the bones of the leg rested. If they raised the toe, the alteration was in the other direction. No matter how overgrown or large a horse's foot was, when it was stood upon the ground, the lower surface must always be level with the ground. In preparing such a foot, they must lower both heels and toe. There was no definite guide in this operation. They must use their own common-sense, basing their practice on the natural form and position of the foot and leg. When a horse stood level upon his feet, the weight through the column of bones forming the leg, rested upon the foot. In front and behind this column they had the muscles and tendons, which had a proper normal relation to each other. There was a certain length of tendon which was best adapted for the action of the muscle; if they raised a horse's heel an inch, that must have a decided effect upon the relative angle of bones into which the muscles and tendons normally just fitted. In proof of the little that would alter this relation, they all knew that if a horse was over at the knee, a veterinary surgeon put a shoe on with a long toe, which had the effect of straining the tendon, and putting the knee back to its place. Of course, these things were matters of degree. He did not say that raising a horse's heel half an inch for a month or a week would permanently injure him, but he did assert that any

thing out of the normal must affect the proper action of the muscles and tendons in front and behind the limb. If they altered the relative position of the foot as they did by over-lowering the heel or toe, they put their extensor and flexor muscles in a position in which they could not act properly. He believed that a long-continued condition—say for weeks or months—of this improper relative position of the foot to the limb, rendered a horse more tired than he would otherwise be. He could do less work; the muscles worked at a disadvantage, and therefore he was more liable to become tired, more liable to become sprained. If the injury to a horse's foot from shoeing were so acute as to cause any pain or tenderness, the horse naturally endeavoured to rest his foot by relaxing his muscles. The result of that was that he went forward at the knee, and he (Mr. Hunting) believed that in at least 80 per cent. of cases in which a horse stood forward at the knees, they had an indication of pain in the foot. When a horse went forward at the knee, every bone of the limb altered its position, and if this were continued, damage to other joints ensued. He remembered one instance where a large number of horses whose feet were made tender by bad shoeing, went forward at their knees, and after this forward condition had continued some months, ringbone began to form. The end of that was that in one of the worst cases in which a horse went forward at the knees—the cause being still continued—ringbone manifested itself in the course of some five or six months. He took it that in that case they had the relative position of the limb and the foot interfered with, and, secondarily, the joint ligaments stretched so as to cause the damage, and, finally, the osseous deposit.

Again, it was extremely difficult to say what exact effect a shoe might have upon a horse's foot when they altered the relative bearing, or relative position of the foot to the limb. Suppose they fitted a shoe on a horse with one or two calkins, or no calkin, in all those conditions they altered the relative position of the limb and they did away with the normal position.

Nearly a hundred years ago, Mr. Moorcroft made some experiments in shoeing which he (Mr. Hunting) was not aware that anybody had repeated, but which nevertheless were well worth repeating. He shod a horse with a perfectly level set of shoes and trotted him out, measuring the distance in foot marks not from fore to behind but laterally showing the distance between the fore feet marks and the hind feet marks. Then he removed the shoes and shod the horse anew, high on the outside. Then he ran the animal out again and found his measurement altered. Having shod the horse high on the inside he trotted him out again, and again he found the measurement altered. Those experiments it seems necessary to repeat, because of the various ways in which men shoe horses now. As to cutting by calkins, he did not know whether there was anything more than some sort of empirical ideas to guide them. If Mr. Moorcroft's experiments were found to be correct they might lay down a law showing the absolute effect of shoeing a horse, not with a level shoe but with one too high on one side or too high on the other. These were (Mr. Hunting continued) the chief injuries which he averred, resulted to the limb from bad shoeing, and which were mostly due either to the form of the foot or form of the shoe altering the relative position of the foot to the bones above.

There were some other injuries to the foot which did not directly so much affect the leg. A man might systematically overlower the heels or systematically leave them high. Men varied in their ideas of the normal foot. One man might regard as normal a foot where the heels were an inch and a half, another a foot with an inch and three-quarters or even two inches of heel.

There was a remarkable dependence of one part of the hoof upon the other for its normal proportions. Everybody knew that if they lowered heels or had a foot with naturally low heels, they would have a correspondingly

increased development of frog. On the contrary with a wasted frog they had high heels. Then as to the sole and the wall, there was a natural relationship between them; a weak sole led in time to alteration of the wall. Take the ordinary case of corn; the majority of practitioners not content with merely relieving pressure, pared out the corn. Why? Not because there was matter there. He did not know why this was done. He held that it was an utterly wrong principle. If a corn, which had not gone so far as suppuration, caused lameness in consequence of shoeing, all that was required was to relieve the pressure. As soon as they removed the injured portion of sole which should keep their wall strong, the pressure causing it to move either outwards or inwards, they did away with the stability that should naturally be there. About the removal of horn, his friend, Mr. Rogers, one day made the remark—and a very sensible one—that, in preparing a horse's foot they should always have a margin of horn on the right side, a little too much rather than too little. With that "little too much" it was almost impossible to damage the foot. With a little too little horn even a good shoe might harm. Now, providing they had a margin of horn, it was not usual to injure a horse's foot, yet there were cases in which, even then, they could do so. In the olden days (when he said "olden days" he meant sixteen or seventeen years ago, and even the previous century) neatness was considered the criterion by which one should judge the shoeing of a horse's foot. The foot was then well pared out and the shoe was fitted as closely as possible, the nails had to be as fine as could be placed, and the workman had to be a very clever farrier indeed to drive those nails without doing harm. It was a very easy matter then to injure a horse's foot, and the remarkable thing to him was that there were any sound horses in those days at all.

He held that in the fit of a shoe one important thing was to have as good and wide a bearing surface for the shoe to rest upon as they could get. If they had a bearing surface the width of the wall, they had a tolerably good surface, if they had a bearing surface less than the width of the wall, they had an insufficient surface, and if they had a bearing surface not only the width of the wall but nearly double its width, resting upon that portion of the sole, firmly touching the ground, then they had the best possible bearing surface they could have. They might say that with such a surface as that they would possibly get an uneven pressure of the shoe especially at the toe. That might be so with a convex foot, but certainly with no other foot if the shoe were properly fitted. A flat shoe on a flat surface—no uneven surface. The wider the bearing surface, the more the pressure was distributed, the firmer the shoe and better the action of the foot. Now, the width of bearing surface of course depended not only upon the foot but upon the shoe. They could scoop a foot out and make a narrow bearing surface, or leave the foot perfectly strong and well and make a narrow bearing surface by scooping the shoe out, and one of the worst shoes they could put on was one sloped at the foot surface from the outside edge right through, so that nothing was left but a narrow ledge for the foot to rest upon. It was not long before the foot did not rest upon the ledge but got within it. When a horse's foot rested upon a shoe that was more like a saucer than anything else, every time his foot was exercised in that saucer-like shoe the worse his injury. It was wonderful how apparently little pain this caused, but he believed that shoes of this kind were responsible for a lot of the lameness they knew nothing about. When they found a horse with a mysterious lameness who wore one of these shoes let them remove the shoes and replace them with properly fitting shoes, and they would probably find that the lameness would cease at once.

Then they had the opposite shaped shoe which was suggested with the idea of expanding the foot, the shoe where the slope was from the inward circumference outwards. The effect was on the posterior part of the foot. The

foot, instead of resting upon a flat surface, rested upon a convex one so that whenever it came down it tended to press the heels apart. There, again, he contended that they had a shoe which was frequently the cause of lameness.

Another shoe which, to his mind, was an abomination, was the shoe with spring heels. He thought that he was correct in saying that up to 1873 or 1874, up to the time when Mr. Goodenough's shoe came into vogue, a farrier was not considered to have turned out good work unless the shoe was slightly sloped off backwards so as to ease the heels. The effect was to concentrate the pressure of the last inch and a half of the foot upon the quarters—the very weakest part of the foot. A spring heeled shoe after wear had a bright groove where the wall touched it. Every time a foot came to the ground with that "on and off pressure" thay had a greater amount of injury done to the foot than by any other kind of pressure that he knew. Many and many a time they had seen horses sent to a forge wearing these shoes and having an indefinite sort of lameness, but they found that when these shoes were removed, the foot lowered, and level shoes fitted on, the animal had gone sound out of the shop. He was perfectly certain that one immediate cause of lameness was this concentrated grooved pressure upon the quarters.

Then in the preparation of the foot there was another performance which, he thought, was extremely injurious, and that was called "opening the heels." Now, a man in opening the heels cut out a portion of horn between the most posterior part of the wall and frog; sometimes it consisted of a bit of the frog and sometimes a bit of the wall. In any case it did harm by weakening the junction of the heels; the part of the foot that was bound together in its normal condition was weakened by cutting a portion of the binding substance out. A bit off the frog he did not think did much harm, but when they got a bit of the wall it was important, inasmuch as it particularly shortened the bearing surface, and the shorter the bearing surface the worse for the horse. It was not an uncommon thing for a man to bring a horse back to a forge after it had been shod and went lame, and say that its shoes were "too tight;" and it was a remarkable circumstance how seldom they heard of a veterinary surgeon correcting a man who asserted that the shoes were on a little too tight. He (Mr. Hunting) submitted that it was impossible to put a shoe on too tight. When he said that he did not mean that they could not physically draw a nail too far, but he meant they could not lame a horse by drawing up a nail. They could hammer as long as they liked until they hammered their clinch off, but they could not draw the nail up too tight. All their "too-tight" shoes, if examined properly, would be found to have an uneven bearing somewhere. Then another remark which they heard, which pointed to ignorance, was that a shoe was a well-fitted or a badly-fitted shoe. The British public at any rate—and he thought some veterinary surgeons shared their view—judged the fit of a shoe by the amount with which it was within the foot or without the foot. Then a matter of fancy came in. If a horse was shod with a shoe that projected, say at the heels for half an inch beyond the walls, these critics would say that the shoe was badly fitted. If the shoe projected inwards, the eighth-of-an-inch everybody said it was a badly-fitted shoe because it might interfere with the other leg. He was inclined to hold that the circumferential fit of a shoe was a matter of small importance, and that a good or badly-fitted shoe could only be ascertained before it was nailed on or after it was taken off; that goodness or badness of shoeing consisted principally in the plane surface; the surface fit of the shoe to the foot, or the foot to the shoe.

As to that bugbear of farriers—contraction—the question had again arisen recently by the introduction of the "expansion shoe" by his friend, Captain F. Smith. He (Mr. Hunting) wished to know whether any distinct, direct evidence could be adduced that a case of contraction had been cured by such

a shoe? If so, he desired to ask whether the contraction was accompanied by lameness. Then he wanted to know what was meant by "contraction." Was it a passive condition, a shrinking in of the heels, or was it an active disease? If an active disease, how could it be cured by an expansion shoe? Could an expansion shoe do anything more than a perfectly level shoe towards improving a horse's foot that had once become contracted? Personally he regarded contraction as a passive falling in of the hoof, and he believed that it was always due—save when it was congenital—to the horse not resting an even measure of weight upon that foot. Where a horse was decently shod, or where, if it was even unshod, a sufficient weight was on its foot, he did not think contraction existed. Personally he did not think that contraction required any treatment except allowing the foot to resume its proper function. He believed that if they kept the heels low enough—not too low—allowing the feet to come to the ground, as was done with the Charlier, or quite as well with a tip, they would have no contraction; and that was a negative treatment.

Mr. S. VILLAR remarked that Mr. Hunting told them that a large proportion of cases of bent knees resulted from bad shoeing, and he also went on to infer that as a consequence of those bent knees they had ringbone. The question occurred to him (Mr. Villar) whether bent knee did not follow upon a disease of the coronet bone of the foot. He did not see why it should not result from that as from bad shoeing. He took it that the deposits which formed in ringbone were the effects of disease previously existing in the bone itself. Mr. Hunting also told them that only empirical ideas of the alteration of shoes were at present in force to prevent cutting. It occurred to him (Mr. Villar) that the only way to prevent cutting, that was, he took it, the striking of one leg with the opposite shoe, was to watch the action and peculiarities of individual horses; and the ideas and rules for the prevention of cutting must necessarily be of an empirical or rule of thumb character. Mr. Hunting said he would not pare the horn if there was not suppuration going up. In this he differed from Mr. Hunting. The horn at parts, if allowed to grow, would get very hard, as hard almost as the iron of the shoe itself. If it were allowed to increase abnormally, or get very large, it would cause pressure at the seat of corn, and this horn pressure at the seat of corn itself produced corn. His idea was that whenever there was extravasation of blood at the seat of corn, the right thing to do was to remove as much horn as possible, that was without unduly interfering with the sole or the heel. He thought it was the right thing to remove the portion of the sole which was between the wall and the bars. He had noticed on very many occasions that horses which came down to his locality from London suffered, to his mind, rather more from want of removal of horn than from having too much horn removed. Many a horse that came from town into the country, which was sold and had to work on the country roads, went—as Mr. Hunting called it—"shovey." He had frequently found that their heels had been allowed to grow abnormally long. He did not know why this should be so, but his belief was that the farrier probably did not wish to spend much time over a foot, and hence failed to remove horn that ought to have been removed. Coming from the hard stone roads of London on to macadamised country roads had, he believed, a very beneficial effect on the horses, but he also thought they had received great benefit from the fact of their heels being lowered when they arrived in the country. With respect to the phrase used that a horse's shoes were "too tight," that expression might convey different ideas to different persons. His idea in speaking of a shoe being "too tight" was that the nails which were used, from some cause or other—either through their being too big or driven too closely—allowed the inner surface of the horn of the foot to press upon the sensitive parts. That, he took it, was the meaning of a

shoe being "too tight," not that the shoe itself was too tightly fitted, but that the nails were too tight or too close to the sensitive structures. Mr. Hunting did not think much of the circumferential surface of the shoe. As regarded the front, Mr. Villar did not think this made a great deal of difference, but behind (on the inside especially), if the shoe were allowed to protrude over the wall of the foot at the quarters and the toe, it was quite certain that a horse would brush badly, or bruise his fetlocks with his shoes. In conclusion, Mr. Villar thanked Mr. Hunting for his able address.

Mr. A. L. BUTTERS alluding to the reference of Mr. Hunting to the bright groove noticed at the heels of shoes when they were removed in cases of lameness, said it had frequently been remarked that the brightness was the result of pressure. This brightness occurred most frequently where the shoes were what was called "sprung at the heels," and the general method of reasoning was that this bright groove was indicative of too much pressure. His opinion was that the bright groove showed not continuous but intermittent pressure. If they looked at a shoe loose when it came off, they would find that it was bright exactly in the same way. They also knew that by the motion of the horn it was brightened in the same way. He quite agreed with Mr. Hunting that shoes should not be sprung at the heel, but have a level bearing. Where shoes were so sprung, there was too much play, which resulted in much lameness. It was not often that the matter of a bright groove at the heels was brought forward. He thanked Mr. Hunting for his interesting address.

Mr. W. ROOTS said that when he was a student, one of the fundamental principles of fitting a shoe to a horse's foot was that there should be allowed a considerable distance between the shoe and the heel of the foot. He took it that the brightness referred to was due to the fact that there was not sufficient space between the heel of the shoe and the foot, that was to say, when the horse put his foot on the ground there was only just sufficient space for the foot to reach the shoe in a downward movement. He was a firm advocate for having a great deal of space between the shoes and the ends of the feet, and he could assure Mr. Hunting, who was a practical man, that since he had adopted the principle taught him at College of allowing a great deal of space between the heel of the foot and the shoe, he had had very few cases of corns, very few indeed.

Mr. A. ROGERSON said he should like Mr. Hunting to explain to them the appearance of the bones of the feet which he had examined, as he had boiled a good many feet down and examined the bones very carefully without detecting anything very definite. He quite agreed with Mr. Hunting as to the preparation of the feet, that they should be fairly well cut out, and shortened at the toe and heel as occasion required. As to "cutting," Mr. Hunting seemed to lose sight of the fact that that depended a great deal upon the way in which they worked their horses. He frequently found that a young horse put to work in double harness brushed himself. That, however, was not the fault of the shoe but the way in which the animal went. He showed a sort of side angle, and he brushed himself a good deal when he was placed on that particular side. As soon as he was changed to the other side or put in single harness the brushing ceased. He concurred with Mr. Villar as to the wisdom of cutting out the heels for corn. This must be done in the case of the heavier class of horses. It might not apply so much to gentlemen's carriage horses. With heavy horses if the feet clubbed and the shoes became twisted and extravasation ensued, cutting down and tracing it to the very bottom was the course he pursued. Mr. Hunting, he thought, was rather inclined to discredit the old seated shoe, but his (Mr. Rogerson's) experience was that the seated shoe was far preferable to, and answered much better than the plain shoe. In many cases he found that horses did not last so long

with the level shoe, if they set the seated shoe out a bit, say half way across, and allowed sufficient bearing both for the crust and the sole. It must be seated a bit, in his opinion, so as to keep it off the sole as much as possible. Mr. Hunting alluded to the heel of the shoe being altered in some way and he (Mr. Rogerson) thought he might illustrate this by a reference to roughing. They would find that many horses after they were roughed got terribly lame from the pressure brought to bear upon the heel by roughing. Have such a horse to the forge and the roughs removed, and he would emerge perfectly sound and remain so. As to "tight shoes," Mr. Rogerson considered that Mr. Villar had explained the meaning of that phrase fairly well. It was not unfrequently found in removing a shoe that was too tightly on that the nail was buckled a bit, and hence pressure was brought to bear upon the deeper seated structures of the foot with resultant lameness. Mr. Hunting's remarks, he believed, were confined to London shoeing. He should have liked him to have referred to provincial shoeing as well. In the country they had all varieties of shoeing; high heels, high toes, and some very wide heels projecting out goodness knows how far at the back part of the shoes. Those shoes would not answer at all in London. They must apparently adapt their shoes to particular character of the streets in which the horses were required to work. Let them take Sheffield for example. If they went there they might be amazed at the ugly shoes with which horses were shod in that hilly town. If they suggested an alteration they would be told that the horses could not ascend and descend the steep streets if their shoes had not high toe pieces and high calkins. Of course horses in Sheffield went at a walking pace, and were not required to go at the fire engine speed that was common in London.

Mr. F. G. SAMSON said that his idea of shoeing was that they could not lay down any definite rule for shoeing a number of horses. Horses' feet varied as man's foot varied. Each had its peculiarities and required to be shod accordingly. As to leaving a space between the shoe and the heel, if he came across a horse with a strong foot and with good heels he considered such a horse could be shod from the outline of the wall right around inside the shoe and close to the heel, and no ill effects would result. He did not think they would thereby produce corn in a horse of that class. If, on the other hand, they had a horse with low heels and flat feet to deal with, care was required not to shoe him too close to the heels. As regarded the seated shoe much the same remark would apply to a horse with flat, low, big feet, particularly as concerned the sole. If they had a flat, low, weak sole to deal with they must suit their shoe to the foot in order to get the horse to go well, and they must shoe him wide. He quite agreed with Mr. Hunting with reference to contracted feet. They might not be cured but they would be much alleviated and the natural form restored by pressing the horse's heels down on the ground. That could be done very well by shoeing with tips. He did not say they were to take the shoe off all at once, but gradually, until they got four nails round the toe. When he ran omnibuses he never was apprehensive about the contracted feet. If a horse showed symptoms of contraction he brought him home, lowered his heels, and shod him with tips, and he generally found that in two or three months' time the animal would do twenty miles a day well and keep sound. His experience was that of Mr. Villar, namely, that when a horse reached the country from town it had generally a superabundance of horn. That he attributed to the fact that in most of the shoeing forges in London the men were paid by piecework and, naturally enough, they got through the job as quickly as they could, simply taking off the old shoes and putting on the new and not touching the feet at all in the sense of removing superabundant horn.

Captain E. R. C. BUTLER desired to add a remark or two with regard to the advisability of removing a certain portion of horn for the treatment of corn.

This piece of horn, as they knew was the small angle between the inturning of the wall at the heel which they called the "bars." First he asked their attention for a minute to what he considered to be the cause of corn. If they had a hard surface impinging, like a shoe, on a soft surface—say, the sensitive laminæ—they would get no pus unless they had a hard surface on the other side. Where they had two hard surfaces compressing a soft surface between them, there they had the mischief. In a dead foot they found on one side the shoe, in the centre the corn, and on the other side they had the extreme end of the pedal bone. Hence they had two hard surfaces compressing a soft surface between them, and it was necessary, therefore, to remove some portion that was being compressed in order to relieve the pressure. Then, if they reflected for a moment on the difference in the growth of the horn of the sole and the horn of the wall, they found that the horn of the sole grew a certain length ahd then became detached. That small portion which in a full shoe was imprisoned between the wall and the bar had no opportunity for becoming detached. and consequently if it were not from time to time removed in a slight degree it would cause undue pressure over that particular spot. With respect to the plain and the seated shoe he, like others in the room, had been attracted to the subject of shoeing and had made some observatious for himself. In the museum in that college there was a cast of the unshod foot of a wild horse shot in Thibet. He had no doubt that Thibet being a mountainous country, it they took such a hoof in a state of nature, as that the cast of which the museum contained, they could have no better guide to imitate as regarded the preparation of a foot for a shoe. Well, in that case what did they find? If they took the trouble to go upstairs and look at the cast they would find that a good half of the sole of that foot was on the ground; he did not think he exaggerated when he said half, and the only portion of the foot that was not in touch with the ground, which did not meet it in contact, was that point round the side and frog. Personally he was a believer in having a very wide and full bearing such as Mr. Hunting advocated—the widest possible for the shoe. Notwithstanding all the changes which had been made in shoes and shoeing, he thought only one had been made in the foot surface of the shoe—that was, the surface which met the horse's foot. Very many hundreds, he supposed, had been made on the ground surface but only one—the seated shoe—had been made on the surface which met the foot. There was only a limited space in the horse's four feet to support a ton weight on the average, and they should take advantage of every little bit of that surface. Concerning the alterations made on the surface of the sboe which met the ground—the ground surface—they were innumerable, and as to these every man had his own particular idea. As had been justly remarked certain towns required a special form of shoe. Sheffield—with which he was acquainted—had been mentioned. There, undoubtedly, a special form of shoeing was required. But in ordinary circumstances he asked whether there was any necesslty for those alterations—calkins for instance—on the ground surface of the shoe. How long will they last? After a horse had been at work a month or six weeks where were they when he came to be shod? They were gone. Did not a horse perform his ordinary work as well without them as with them? Yes. What, then, was the object of them? Mr. Hunting did not say that the raising of the heel half an inch for a month would injure the horse. Why? Because the heel was not raised half an inch for a month, within a week the calkin which raised the heel off the ground was worn away and the foot resumed its ordinary position. Mr. Hunting expressed a desire which he (Captain Butler) was afraid he could not gratity, to know whether a contraction had ever been cured by a particular shoe; and, if so, to what was the cure due. Contraction, to his mind, except in special cases (and there were many causes of contraction)—contraction, such as Mr. Hunting mentioned was due

to the abuse of the foot by the farrier. It was the result of taking away the frog, and of that practice known as opening the heels. By opening the heels he understood the cutting away of the bar or some part of the bar. The bar, he took it, was the strengthener of the heels, the dovetail at the back by which the foot was kept in shape ; and if by removing it they improved the appearance of the foot for the time they did so at the cost of weakening it for the time to come, so that the heels closed in. The same effect was produced by taking the frog experimentally off the ground. By cutting one and leaving the other in conjunction with the ground they could alter the shape of the foot; the one with its frog off would become small, much smaller than its fellow. If this were persisted in they got a contracted foot. Then they had a cure for those pads and other devices which were of use in making the fortunes of their inventors, who were assisted by the farriers. Mention had been made of the bright groove or spot visible at the heels of a shoe. This had been attributed to the movement of the heels and consequent intermittent pressure upon the shoe. Personally, he thought they would find even when they shod a horse with a shoe having a full bearing all round, that on removing the shoe it had this bright spot. Whether they eased the heels or whether they did not, and the foot was in contact with the shoe all round, this bright spot appeared. If they carried their minds back a little while they would remember an experiment made in Germany by one Lungwitz and, at the same time, by Veterinary-Captain Smith, who were apparently simultaneously at work on the expansion of the horse's foot. In a word, they found that the horse's foot expanded to an infinitesmal extent, that is it opened out at the heels to say, about the fiftieth of an inch. That opening and closing of the heels, which was so small as practically to be disregarded in shoeing, was the cause of this burnished spot they found on the heels of the shoe.

THE BOMBAY VETERINARY COLLEGE.

A BOARD of examiners, consisting of Veterinary-Captain Morgan, Superintendent, Civil Veterinary Department, Bombay, as President, and Veterinary-Captains Mills and Burke, Veterinary-Lieutenant Pease, Dr. M. G. Deshmukh, Messrs. Dhakmarwalla and Vakharia, assembled on April 16th, and conducted the professional examination of the students of the Bombay Veterinary College. The results were declared on the 26th, and are as follows :—

The following students obtain Diplomas :—W. A. de Silva, W. R. Robertson, Serajudin Khan, and R. N. Sane.

Class B.—G. D'Silva, S. R. Jalihal, R. J. Gosla, C. Engel, Y. Bhagawat, S. V. Soman, P. S. Munshi, W. Buckel, and F. de Silva.

Class A.—H. Foy, C. Buckel, S. E. Benjamin, A. Boyce, W. Mudliar, A. Saik, and D. Mamtora.

Veterinary-Captain Morgan presided at the distribution of diplomas and prizes. The latter were awarded as follows :—

Class C.—1. Veterinary-Colonel Hallen's prize of Rs. 100, for the best practical student in Class C., Mr. Surajadin Khan; Mr. R. R. Munmal's Silver Medal, for the best Hindoo student in Class C, Mr. R. Sane; Veterinary-Captain Mill's prize of Rs. 30, for the best operator in Class C, Mr. Surajadin Khan; Government Silver Medal, for the best student of Class C in Soundness and Ageing of Horses, Mr. W. A. de Silva; Veterinary-Captain Morgan's prize of Rs. 32, for the best student of Class C in Breeding and Obstetrics, Mr. W. Robertson; Veterinary-Captain Mill's prize of Rs. 25, for the best student in Class C in practical shoeing, Mr. W. Robertson.

Class B.—Veterinary-Captain Mill's prize of Rs. 20, for the best student in Medicine and Surgery in Class B, Mr. Bhagawat; Sir Dinshaw M. Petit's

prize of Rs. 40, for the best student in Class B, Mr. G. T. de Silva; Mr. N. D. Dhakmarwala's prize of Rs. 15, for the best student of Class B, in Anatomy and Physiology, Mr. G. T. de Silva.

Class A.—Sir Dinshaw M. Petit's prize of Rs. 20, for the best student in Class A, Mr. H. Foy; Steel Memorial Silver Medal, for the best student of Class A, in Handling of Animals, Mr. H. Foy; Mr. N. D. Dhakmarwala's prize of Rs. 10, for the best student of Class A, in Anatomy and Physiology, Mr. H. Foy; Dr. M. G. Deshmukn's prize of Rs. 15, for the best student of Class A, in Chemistry, Mr. H. Foy; and Veterinary Captain Burke's prize of Rs. 15, for the best student of Class A, in Botany, Mr. H. Foy.

At the conclusion, the Principal thanked the President and members of the Board of Examiners for their kindness in coming here during such a trying period of the year. Vet.-Capt. Morgan, in reply, said,—On behalf of my fellow examiners and myself, I thank Captain Mills for the kind way in which he has spoken of our endeavours to carry out the examination. This is the second occasion on which I have acted as President of this Board, and I would like you to remember that my interest in this institution does not cease with the examination. My duties are such that I am constantly brought into contact with men who have been trained here, and I see the work they do and how their efforts are appreciated or otherwise by the outside public. In this way I am kept more or less in touch with the College throughout the year. I must congratulate the institution on having acquired the services of an Assistant Professor, a want that has long been felt, and I feel sure with the present staff, that if only the right material for them to work upon is forthcoming, that they will turn out men who will give a very good account of themselves in the future. The retirement of Colonel Hallen, Inspector-General of the C. V. D., will be a loss sorely felt by all of us: a kind and sincere friend, and one who has devoted some thirty years to horse-breeding, furthering and promoting veterinary knowledge in this country. His last legacy to India, viz., the Civil Veterinary Department, is the one that concerns us most. At present it is only a promising child, and it behoves us to rear and educate this child, so that, should it please God to spare Colonel Hallen to visit this country again, he will find that our united efforts have been successful, that the child has prospered and grown under our care into a strong man, with the power and will of doing great good. Those of you who have got your diplomas and are leaving, I wish you all success. I beg that you will try and become thoroughly practical men, and I trust that you will live good honest useful lives, be grateful to the institution that trained you, and gave you a means of earning your livelihood.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

At the council meeting held on June 6th, Sir John Thorold reported the unanimous recommendation of the Committee that Professor Brown be asked to accept the office of Consulting Veterinary Surgeon to the Society in conjunction with Professor Simonds, and that Mr. Ashworth be asked to act as Chairman of the Committee during Sir John Thorold's tenure of office as President of the Society.

The following report had been received from Professor Brown :—

Pleuro-pneumonia.—In connection with the outbreak of this disease discovered in Kent towards the end of April, seven cattle affected with pleuro-pneumonia were slaughtered, and 150 others which had been in contact were also slaughtered by order of the Board of Agriculture.

Swine Fever.—620 swine died from swine fever in the four weeks in which 6,619 were slaughtered by order of the Board of Agriculture as diseased or

in-contact animals, while 131 suspected pigs were slaughtered, but found on *post-mortem* to be free from the disease.

Anthrax.—There were 37 fresh outbreaks of this disease in four weeks. Seventy-nine animals were attacked, of which 67 died, four recovered, and eight remained alive diseased when the last published return was made up.

Sir JOHN THOROLD, in moving the adoption of this report, said it was his pleasant duty to ask the Council to appoint Professor Brown as Consulting Veterinary Surgeon to the Society. In view of the altered circumstances of Professor Brown's connection with the Board of Agriculture, the Council would wish to attach him to the Society, and he did not think that any better plan could be adopted than by appointing him as Consulting Veterinary Surgeon to the Society, in association with Professor Simonds—to whom, he might say, the appointment was most agreeable. He begged, therefore, to move that Professor Brown be appointed Consulting Veterinary Surgeon to the Society, in conjunction with Professor Simonds.

Earl CATHCART, in seconding the proposition, said they would never forget the great obligations they were under to their old friend Professor Simonds. Professor Simonds, however, did not live near London, whilst Professor Brown was in immediate touch with all that was going on. It was also essential that Professor Brown should have some *locus standi*, and he hoped that he would accept the appointment as an expression of their great respect for him.

The DUKE OF RICHMOND AND GORDON said that he had very pleasant recollections of his association during six years with Professor Brown at the Privy Council Office, and he could only say that if the Council availed themselves of Professor Brown's services and great professional skill, the Society would be a great gainer. He hoped, therefore, that Professor Brown would be appointed.

The motion having been put and carried unanimously,

Professor BROWN said that, in accepting the appointment which the Council had conferred upon him, he counted it, of course, as a very great compliment. He should be, as he had always been, most happy to help the Society in every possible way. As he had said to the Committee yesterday, he did not feel that he could possibly enjoy more confidence than he had always experienced from the Council. It was an additional satisfaction to him to know that this present appointment was to be in association with Professor Simonds, with whom, with very slight intermissions, he had been associated as a colleague for more than a quarter of a century.

Special Committee on Abortion in Cattle.

Sir JOHN THOROLD (Chairman) presented a detailed report from this Committee, which had held four meetings, viz., on March 5th, April 2nd and 30th, and June 4th. In the course of their sittings the Committee had examined the following ten witnesses, including stockowners whose herds had suffered from abortion, and veterinary surgeons who had had experience in dealing with the disease, viz. :—

1. Mr. Clement Stephenson, F.R.C.V.S., Newcastle-on-Tyne.
2. Mr. James Peter, Agent to Lord Fitzhardinge, of Berkeley Castle.
3. Mr. Frank Booth, M.R.C.V.S., of Abergele (the Society's Provincial Veterinary Surgeon for Carnarvon and Denbigh).
4. Mr. John Denchfield, Burston House, Aylesbury (stockowner).
5. Professor McFadyean, M.B., B.Sc., F.R.S.E., Dean of the Royal Veterinary College.
6. Dr. Sims Woodhead, M.D., F.R.S.E., Director of the Laboratories of the Conjoint Board of the Royal Colleges of Physicians and Surgeons.
7. Mr. Robert Hickes, F.R.C.V.S., Market Weighton.

8. Professor Penberthy, Royal Veterinary College.
9. Professor J. Wortley Axe, M.R.C.V.S.
10. Colonel Curtis-Hayward, Quedgeley, Gloucester.

So far as the inquiry had extended, the Committee believed that they were justified in making the following recommendations :—

I. For practical purposes, and with a view to the adoption of the necessary precautions, the disease should be deemed to be contagious.

II. For the purposes of prevention, strict sanitary precautions, including habitual cleansing and disinfection of places where breeding cows are kept, should be insisted on, and particular attention should be paid to the character of the food and the water with which the animals are supplied.

III. The treatment by the aid of antiseptics of cows which have aborted is certainly to be recommended, and the evidence which has been already furnished in favour of the use of a solution of bichloride of mercury, as described in the leaflet (already issued), appears to the committee to justify the advocacy of its general employment in every case where the disease presents itself in a herd. It may be advisable to state that, in view of its poisonous nature, it is necessary to guard against any injurious consequences arising to pigs or poultry from the careless disposal of the sweepings from the sheds in which this disinfectant has been used.

IV. On the question of experiments for the purpose of proving whether or not the disease is of a contagious character, the Committee do not feel justified in advising the Society to expend a large sum of money in this direction. At the same time it is impossible not to realise that a decision on this point is a matter of very considerable importance; and the Committee recommend that an additional sum of £200 be placed of the disposal of the Veterinary Committee for the purpose of further scientific investigations into the causes of abortion in cattle.

Sir JOHN THOROLD, in presenting this report, said that the Council might probably not be altogether satisfied with the result of the inquiry. The Committee trusted, however, that something of benefit to farmers would ensue, although they did not feel justified in asking the Council to undertake the very large expenditure which it was thought would be necessary to determine the question at issue. They had been assured by the Board of Agriculture that, when the favourable moment arrived, the Board would be prepared to take up the matter; but apparently the favourable moment was deferred, and, during the interval, the Committee suggested that the Council should place at the disposal of the Veterinary Committee the sum of £200, which would be used by them exclusively for carrying on such experiments as might help to throw some light on the subject. There was a further sum of money at the disposal of the Royal Veterinary College, and, with these two sums, it was hoped that some satisfactory result might be obtained. The Committee were very much indebted to Professor Brown for his assistance during their labours, and for condensing the results of the inquiry into the report. He begged to give notice that at the next meeting of the Council he would move that a grant of £200 be placed at the disposal of the Veterinary Committee for carrying out a further investigation into this subject.

Notes and News.

RABIES IN GREECE.—The prevalence of rabies in Athens and the neighbourhood is causing much alarm. A number of patients are in Paris under treatment by the Pasteur system.

A NOVEL RACE.—At Hinterkirchen, in Bavaria, a race has taken place between an old man and an old horse, in which the man was successful. The man is eighty years of age, and the horse thirty.

JEWISH MODE OF SLAUGHTERING CATTLE.—On account of the regulations made in the Canton of Tessin, Switzerland, for killing animals according to the Jewish rites, some Germans have entered into negotiations with the municipalities of Como and Luino, Italy, to establish Jewish slaughter-houses, and to export almost the whole of the meat for the use of the Swiss Jews.

ANIMALS UNSUITABLE FOR HUMAN FOOD.—It is proposed by a deputy in the French Legislative Chamber, to raise a fund to defray the cost of slaughtering oxen, sheep, and pigs attacked with contagious diseases which render them unfit for food. Experimental research is also to be encouraged in veterinary laboratories, in order to arrive at the necessary measures for the prevention of epizoötic diseases.

RABIES IN CATTLE.—A valuable milch cow, belonging to Mr. Buckley, farmer, Middlewich, Cheshire, has died from rabies, having, in the opinion of the veterinary surgeons, been bitten by a mad dog. Mr. Buckley has lost four cattle from the same herd from rabies. Much uneasiness prevails throughout the district, as there is no certainty if the dog which did the mischief has not attacked herds belonging to other dairy farmers.

PROLIFIC SHEEP.—As an instance of extraordinary prolificacy in sheep, we (says the *Inverness Courier*) may mention Mr. W. A. Cumming, Allanfearn's, record for this year. Mr. Cumming had 22 lambs from seven Leicester ewes, all of which, with one exception, are alive and healthy; and from 41 ewes, 75 lambs were dropped, 20 of the ewes being gimmers. They were by the first prize tup which secured the championship in the local society's show of 1892, purchased from Mr. Cameron, Killen.

BACTERIA AND MOULDS.—Since the first discovery of bacteria, biologists have recognised a close relation between these vegetable organisms and those which are commonly known as moulds, or fungi. Professor Franklin has recently made a careful study of these two classes of organisms, with special reference to their action upon organic substances. He states that moulds produce an oxidation or combustion, while bacteria produce the catalytic change commonly termed fermentation.

AN ELEPHANT WITH TOOTHACHE.—The Paris correspondent of the *British Medical Journal* says that one of the show elephants of that city exhibiting signs of pain in the jaw by rubbing it on the ground, a dentist was called in, who perceived that the root of one of the tusks was attacked with caries. The necessary precautions being taken to render the animal harmless, the decayed tusk was several times treated. Now the elephant is free from pain, and receives the dentist's visits without showing any signs of hostility.

AN AGED PONY.—Mr. D. M'Intosh, head gamekeeper, Lochrosque Forest, Ross-shire (the *North British Agriculturist* states) has in his possession a Highland pony whose well authenticated age is forty years. Two years ago the pony carried home a magnificent stag on his back to the larder of Lochrosque, and in this work of "up hill and down dale" he showed a good deal of his old agility. Now, however, his place is taken up by animals of fewer years, and Hamish, as he is called, is "pensioned off duty," living on the hills and feeding with the red deer.

CONTAGIOUS DISEASES IN GERMANY IN 1892.—The official report on the contagious diseases among animals in the German Empire in 1892, shows there were 3,697 cases of anthrax, against 3,257 in 1891; 500 cases of rabies against 534; 823 cases of glanders against 981, and 1,182 cases of bovine contagious pleuro-pneumonia against 1,273. Foot-and-mouth disease was present in 107,345 places as against 47,865 in 1891. The claims for compensation amounted to £54,000, of which £20,000 was paid for glanders, £16,000 for contagious pleuro-pneumonia, and £18,000 for anthrax.

CÆSAREAN SECTION IN A LIONESS.—A lioness known by the name of Saïda, belonging to a small menagerie in Paris, died the other day "in the

straw," as people used to say even of human queens in the days of Smollett. The poor beast suffered much, but submitted to the manipulations of no fewer than eight students of the Alfort Veterinary School, specially selected for their obstetrical skill. Delivery could not, however, be effected, and Saïda uttered a piteous roar, and died, just as Cæsarean section was about to be performed. Two cubs were immediately extracted, but they were dead.

Cattle Plague in Russia.—The rinderpest in certain provinces of Russia is shown by a Consular Report from Taganrog to have been very destructive last year. In five provinces of that district, 130,000 animals attacked or threatened by this disease, died or were slaughtered. The loss was greatest in Stavropol, where the peasantry lost 64,000 head of cattle; and here, as well in Ekaterinoslav, the compulsory destruction order gave rise to rioting. The cattle slaughtered are paid for, but this does not compensate the loss of peasants whom the order has deprived of their beasts of burden, and who cannot replace them because all traffic in cattle is forbidden. It seems, however, that the strict measures which the authorities enforce have stamped out the disease in many other provinces.

Tuberculous Milk.—Duclaux, in the *Annales de l' Institut Pasteur* for November last, reviews the subject of tuberculous infection through the medium of milk. He calls attention to the investigations of M. Frijs, of Copenhagen, who, among a lot of thirty cows, the milk from which was regularly sold, found nearly all affected by visible signs of disease. One animal was almost too weak to stand. The milk furnished by this animal was a yellowish, watery secretion, but was, almost until the last day of the animal's life, mixed with the common product of the herd, and sold for human consumption. The danger of infection through milk is, by this writer, believed to be so great, that there is no safety except in avoiding the use of milk which has not been submitted to a temperature sufficient to destroy the tubercle bacilli. It is safer that the milk should be boiled, but a temperature of 160° is sufficient to kill all disease germs.

Tuberculosis in Domestic Pets.—Professor Fröhner, of the Berlin Veterinary School, has recently made some investigations as to the prevalence of tuberculosis among small domestic animals, the results of which are as important as they are interesting. In the clinic for small animals during the last seven years, out of a total number of 70,000, only 281, or 0·4 per cent., have been found to be suffering from tuberculosis. The proportion of tuberculous dogs was as low as 0·04 per cent.; cats seem to be considerably more subject to the disease, the proportion of tuberculosis among them being one per cent. The animals most severely affected are parrots, the ratio of tuberculosis among them being as high as 25 per cent., no doubt owing to imperfect acclimatisation. Living as these birds mostly do in rooms constantly used by members of the family, their liability to tuberculosis makes them somewhat dangerous pets.

Arab Horses.—Colonel T. A. Dodge, of the United States army, made a study of the supposed magnificent horses in the domain of the Sultan of Turkey. Contrary to the usual belief, Turkish horses are not of unmixed Arabian descent. The Arabian is found at its best in the Arabian desert. The farther away from that one travels, the more and more mixed becomes the blood of the horses of the Orient. The Sultan himself rides Arabians, and always white ones. Colonel Dodge tears the glamour from about the Turkish and Oriental horses. He says there are finer saddle horses about American Southern towns any day of the year than can be seen even in the stables of the Sultan and his staff, and, further, that "the New York Horse Show is not approached in the exhibit of high-grade saddle beasts by anything to be found in the Orient." Colonel Dodge saw an aged Arabian in the Sultan's stud that had carried upon his back in his time no less than four

Sultans, beginning with Abd-ul-Mejid in 1860. The old fellow must therefore be now long past thirty years old. The pure-bred Arabian is not a heavy enough horse for the Turkish cavalryman. For this purpose the taller, larger-boned Hungarian is imported and crossed on the Arabian. The Hungarian has a strain of English thoroughbred blood in him.

Correspondence.

TURTLE TORTURING.

SIR,—Some natives on capturing a turtle make a slit through the skin near the tail, to see if there is sufficient fat under the upper or dorsal plate. If not, it is liberated, when it is said to recover from this operation. In Maryland (U.S.A.) the living terrapin is thrown into tepid water, the skin and claws removed, then it is again immersed in water. The under-shell is cut away to take out the liver and gall bladder while the animal is still alive. The beauty and commercial value of tortoise-shell depends on the health and condition of the animal when its shell is excised. If after death the tortoise is allowed to putrify it yields an inferior, cloudy, opaque tortoise-shell. In slaughtering cattle somewhat similar bio-chemical changes occur (bio-chemical actions are those which take place during life). Unless the animal has been well supplied with drinking water a short time before slaughter, on "dressing," or preparing the meat of the carcase, the hide may stick to the "bark," or the side of the animal, instead of pealing off clean and quickly.

It is alleged that the living turtle is suspended over a fire till the heat causes the shield to start from the bony part of the carapace, or upper shell, after which the mutilated animal is allowed to return to the water. Darwin recorded that the back of a living turtle was covered with burning charcoal to cause the outer shell to curl upwards, so that it could be forced off from the creature's back with a knife. The tortured turtle was then put back in the water, where after a while a new shell formed, which was too thin to be of any service, hence the animal always appeared ailing and sickly. The Chinese consider that tortoise-shell is damaged by being withdrawn from the living animal by the "dry" process of heat; hence they throw the living turtle into boiling water, where they detach its shell, then return the shell-deprived animal to the sea with the hope of being able to re-capture this previously tormented tortoise with a fresh grown shell. Even should this mutilated reptile live a while, it seems unlikely that it would be able to grow a new shell. Some natives actually light a fire on the back of the caret, or Hawksbill turtle (Caretta imbricata), so as to remove the tortoise-shell plates. Causing the animal prolonged pain tends to spoil the shell as well as deteriorate the flavour of its fat and flesh. Of course this barbaric treatment is also financially an error.

Numerous experiments have shown that the only rapid and merciful way to kill the turtle is to suddenly plunge it into a refrigerating mixture, or subject it to intense dry cold air. If on capture the turtle were thus immediately killed, bled before blood-clotting, gutted, cleaned, and its carcase subsequently dry-air refrigerated, then when convenient, its shell could be removed in its best and most beautiful condition. Sir Emerson Tennant, in his "Natural History of Ceylon," gave the following record of revolting ruffianism. Just above Ceylon, in the small island of Jaffna, in its market the flesh of the living turtle is sold piecemeal by the Tamil fisher folk. The plastron, or lower shield, with its integments having been previously removed, the poor turtle is thrown on its back to display all the movements of its heart, lungs, and viscera. Women then scoop out the slowly oozing blood with a broad knife. From this mutilated living animal customers choose any part, which is cut off and

sold by weight. Fins, fat, and flesh are thus hacked out, while each act of severance produces acute agony, too clearly proved by the turtle's contortions. Writhing in the sun it lies thus for hours, the heart and head being usually the last pieces selected. Till the turtle's head is cut off, it snaps its mouth and opens and closes its eyes, thus showing that life is still going on.

Nowadays turtles after capture are confined in dirty, close marine pens, and subjected to much cruel treatment and over-packing on board ships. Hence from the time they are caught in the Caribbean Sea, off the Mosquito Coast (Nicaragua), some 500 miles from Jamaica, till delivered in London, the turtle's death-rate is about 60 per cent. The period from their capture till their arrival in London varies from three to six months. By proper treatment and feeding the turtle mortality should not exceed 5 per cent. In normal conditions and season the flesh of the recently-caught turtle is red and firm, resembling beef. Its fat should cut as resistantly as that of the kidney fat of the ox. By prolonged ill-treatment, much of the turtle fat sold in London, &c., is bluish, while in texture it has become almost as soft as an ordinary jelly. The flesh has turned to a pale pink colour, and is watery and flabby, signs which indicate commencing decomposition.—I am, sir, yours, &c.,

J. LAWRENCE-HAMILTON, M.R.C.S.

30, Sussex-square, Brighton.

A CORRECTION.

IN describing Mr. Dudley James' new hobbles in our last issue, that gentleman was, through an error, described as a member of the profession. We regret the mistake, as he is still a student, but we trust the title is only deferred for a brief space.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from F. C. Mahon, London; J. Lawrence-Hamilton, Brighton; D. James, London; Hy. Sherwood Norris, London; A. W. Hill, London; R. Ward, Baltimore; Veterinary-Captain Burke, A.V.D., Madras; J. Rooth, Douglas, Isle of Man; M. E. Leclainche, Toulouse, France; Veterinary-Lieutenant H. T. Pease, Meerut.

BOOKS AND PAMPHLETS: *Veterinary-Captain Fred Smith*, A Manual of Saddles and Collars; *C. Cadeac*, Sémiologie Diagnostic et Traitement des Maladies des Animaux Domestiques (Vol. II.); *P. H. Bryce*, Report on Tuberculosis in Ontario; Civil Veterinary Department of India Ledger, Series No. VI.; Nouveau Dictionnaire Pratiques de Méd. de Chir. et d' Hygiène Vétérinaires; *Ellenberger and Schütz*, Jahresbericht über die Leistungen auf dem Gebiete der Veterinär-Medicin, Jahr., 1893; *M. E. Leclainche*, La Virulence des Viandes Tuberculeuses; Johns Hopkins Hospital Bulletin: *E. de Freudenreich*, Les Microbes et leur Rôle dans la Laiterie; Bulletin des Seances de la Société Nationale d'Agriculture de France; *Major A. G. Leonard*, The Camel, its Uses and Management; Bulletin de la Société Centrale de Medecine Vétérinaire.

JOURNALS, ETC.: *Deutsche Zeitschrift für Thiermedicin und Vergleichende Pathologie; Cape of Good Hope Agricultural Journal; Revue Vétérinaire; American Veterinary Magazine; Journal de Médecine Vétérinaire et de Zootechnie; Thierarzt; Presse Vétérinaire; Lancet; Annales de Médecine Vétérinaire; British Medical Journal; Clinica Veterinaria; Journal of Comparative Medicine and Therapeutics; American Veterinary Review; Echo Veterinaire; Journal of the Royal United Service Institution; Tijdschrift voor Veeartsenijkunde; Modern Medicine and Bacteriological Review; Live Stock Journal; Edinburgh Medical Journal; Recueil de Médecine Vétérinaire; Mark Lane Express; Zooatrist; Veterinarian; Baily's Magazine.*

NEWSPAPERS: *Madagascar News; Globe; Times of India; Madras Mail; Baltimore Weekly Sun; St. James's Gazette; Montreal Gazette.*